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Reading Matter Contentspage 1986

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PAGE 25



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NEW YORK 49 CLIFF STREET,





THE IRON AGE

New York, Thursday, June 18, 1908.

A Modern Wood Working Machinery Factory.

The Rochester Works of the American Wood Working Machinery Company.

BY H. R. COBLEIGH.

(With Supplement.)

The largest plant of the largest manufacturer in its line is that of the American Wood Working Machinery Company, in Rochester, N. Y. In its functions it is complete, being independent of outside sources for all except raw materials. Given transportation facilities, and it is excellently located for these on the New York Central & Hudson River Railroad, and it is self-reliant for the rest, having even its own foundry and power plant. Among the noteworthy general features are the arrange-

Machine Company, Ltd., Hoyt & Bros. Company, Levi Houstan Company, Globe Machine Company, Lehman Machine Company, Milwaukee Sander Mfg. Company, C. B. Rogers & Co., Rawley & Hermance Company, Williamsport Machine Company, and the Young Bros. Company. When the consolidation was first made the company was operating twelve factories, and, while it had the advantage of a centralized selling force, it did not have the efficient producing organization that has

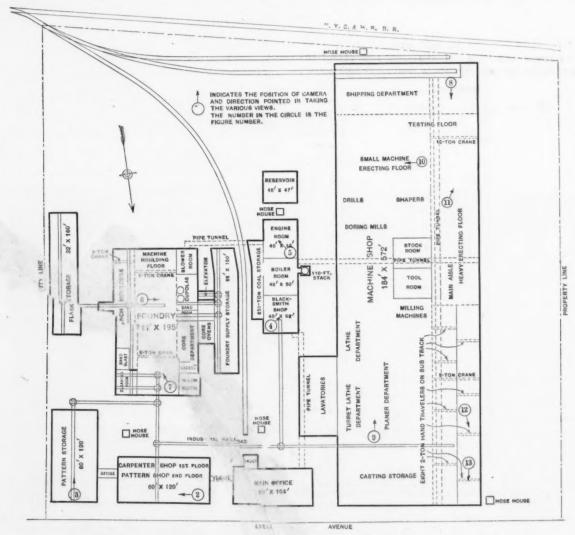


Fig. 1.—Plan of the Rochester, N. Y., Works of the American Wood Working Machinery Company.

ment of the buildings and the intercommunication for convenient and economical manufacture, and the disposition and extensiveness of the equipment in the machine shop which are important to the same end. Before taking up in detail the description of these works it may be interesting to give a little concerning the company as a whole.

Organization,

The American Wood Working Machinery Company was incorporated September 30, 1901, as the successor by purchase to the F. H. Clement Company, Glen Cove

since been developed. The factories are now concentrated in six, located where they are approximately most invenient to the territories that create the greatest demand for the products in which each specializes.

The Rochester Works combine what were formerly
H. Clement Company, Glen Cove Machine Comnd C. B. Rogers Company branches. The R. &
H. orks, at Williamsport, Pa., combine the Rawley &
nce Company and the Lehman Machine Company
branches. The Williamsport Works, also in Williamsport,
T., combine the Williamsport Machine Company

and the Young Bros. Company branches. The Houstan Works, at Montgomery, Pa., were formerly those of the Levi Houstan Company, now one of the branches. The Sander Works, at Green Bay, Wis., were formerly known as the Milwaukee Sander Mfg. Company, and the Hoyt Works, at Aurora, Ill., combine the Hoyt & Bros. Company and the Globe Machine Company branches. The executive offices of the company were removed over a year ago from New York to the Rochester Works. The officers are J. E. McKelvey, president; Gen. Hiram Duryea, vice-president; A. N. Arms, secretary-treasurer, and F. H. Clement, chief of construction and manager of the Rochester Works, to whom credit is principally due for the mechanical features of the new plant at Rochester.

Among these six factories the work has been reassigned to some extent so as to avoid duplication and promote specialization to secure the well recognized benefits that attend that method of manufacture. For example, the Rochester branch specializes in heavy planing mill and furniture machinery and pattern shop machinery to a certain extent; the R. & H. branch makes molders and the heavier sash, door and blind machinery; the Houstan branch, molders and lighter sash, door and blind machinery; the Williamsport branch, band saws and sawing machinery; the Sander branch, triple-drum sanders exclusively, and the Hoyt branch, heavy planing mill machinery. In the Rochester works a distinct line is drawn between heavy planing mill machinery and furniture machinery; each department has its own machine tool equipment and forces of workmen, and except in emergencies the two are practically distinct factories.

Buildings.

The plant occupies about 10 acres on Lyell avenue, on the western boundary line of the city. The buildings, eight in number, are shown in relation to one another in the plan view, Fig. 1, and as may be seen are arranged so that the progress of the work through the plant is continuous from the drafting room in the main office, when it is a new machine that is being built, or the pattern shop, for all standard machines, to the shipping department at the rear of the machine and erecting shops. The main office is the logical beginning and ending of a trip through the works, and yet is centrally located, so that all departments of the plant may be reached by the most direct line from this point. The buildings, mentioned in the order which will be adhered to in the description which follows, are the main office, carpenter and pattern shop, pattern storage, flask storage, foundry, foundry supply storage, blacksmith shop and power house, and the machine shop. All of the buildings are of brick, except the flask storage, and, with the exception of the foundry, power house and blacksmith shop, which are essentially fireproof buildings, all buildings are provided with automatic sprinkler systems for protection against fire. The machine shop, power house, foundry and supply house are of steel frame construction, reinforced by concrete and brick.

Points to be noted are that all of the buildings are capable of extension with growth, and are connected by an interworks railway system which communicates with crane or trolley service in the principal buildings. Spurs from the railroad facilitate the receiving and shipping of freight. One passes between the foundry supply storage and the power plant, over which are brought the sand, coke, pig iron, &c., for the foundry, and the coal for the boiler room. Two spurs pass, one into and the other along the end of the machine shop building, where the shipping department is located, and from which the heavy machines can be loaded by crane direct into cars.

The buildings are heated by a steam heating system, supplied with exhaust steam from the engines and auxiliaries in the power plant. When the available exhaust steam is insufficient make-up live steam is supplied to the system through reducing valves. This covers emergencies such as a shut-down of the engines. In all there is a total of some 32,000 sq. ft. of radiation. The system is proportioned to heat all buildings to a temperature of 62 degrees, with the exception of the pattern shop and the office buildings, which are heated to 70 degrees. The Paul vacuum system is used and maintains an everage of 12 in, of vacuum on the radiators and coils. The heating system supply lines are carried from the power plant to the different buildings through tunnels which are indicated in the plan Fig. 1. These are concrete conduits 5 ft. sq. in section, and also allow underground distribution of electric current for lighting and power in the different buildings.

Main Office.

The office building is 50 x 104 ft., two stories high. The first floor contains the works offices as well as the offices of the purchasing agent, chief of construction, superintendent, and the general engineering department, including the drafting room. The second floor is occupied by the executive offices. The basement of this building has fireproof vaults for valuable papers and other matters, and also affords storage space for circulars and printed matter and an emergency hospital room, where accidents and illnesses of employees are treated. key to this room is kept in the main office. In charge of the work is an employee ordinarily engaged in the millwright department, who has had experience as a trained nurse. He is assisted in his hospital work by other employees in each department, there being a staff of about six in all. The equipment includes that necessary for first aid to the injured, such as a cot, stretcher, medicines, liniments, bandages, &c. Serious cases are always turned over to a competent physician having an office nearby.

Pattern Shop,

The building to the east of the office is a two-story building, 60 x 120 ft., containing on the first floor the carpenter shop, where flasks are made and repaired and boxes and crates constructed. The second floor is the pattern shop, a view in which is given in Fig. 2. This view indicates something of the well-lighted condition of the interior. The benches are arranged near the windows and the machines in the center of the room. tool equipment includes a hand-feed upright drill, a surfacer, a 20-in. buzz planer, a 32-in. 16-ft. bed patternmaker's lathe, 20 in. x 8 ft. patternmaker's lathe, a 36in. band saw, a double saw bench, a universal saw bench, and a speed lathe, all of the company's own make, and a grindstone, and a 30-in. Boston blower for the dust exhausting system. A 15-hp. Rochester motor drives all of the foregoing. There are also six Fox had trimmers and two embossing presses for making loles are nating plates for patterns. The movable work be moved all of the same hight, and two or more can be moved together end to end or side to side and secured to one another with cleats, to give as large a continuous table area as may be needed A bridge connects the pattern shop with the pattern storage.

ane Pattern Storage.

The pattern storage is a 60 x 120 ft., two-story building. As shown in the view given in Fig. 3, the patterns are stored on solelves supported on iron columns made of gas pipe. Attached to the columns are cast iron brackets for supporting the shelves, as clearly shown in the illustration. The racks have the advantage that the shelves can be adjusted vertically, and also, if rearrangement in the pattern storage department becomes desirable, the columns themselves can be easily moved to change the location of any given tier of shelves.

The Foundry Department.

Immediately south of the pattern shop and pattern storage is the foundry, with the flask storage on one side and the foundry supply storage on the other. flask storage is a building 32 x 160 ft., in which are stored the wood and iron flasks used in the foundry. Although this building is of wood it is so isolated that it would not be likely to take fire and could not communicate it nor do any very serious damage. The foundry supply storage, a 25 x 150 ft. building, holds the stock of iron, coke, sand, coal, wood, &c. It is somewhat unusual to have all of the stores under cover, but the advantages of it can readily be appreciated.

Two interior views in the foundry are given in Figs. 6 and 7. This building is 111 x 195 ft., and has brick walls and a reinforced concrete roof, supported by steel





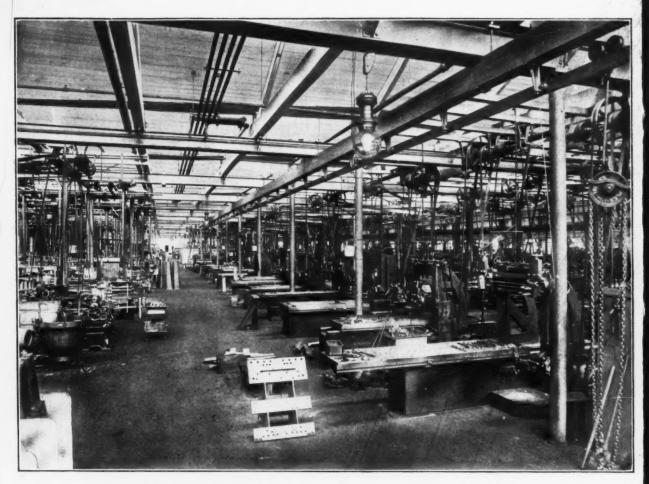


Fig. 9. Looking South in the Machine Shop. Planer Section on the Right.

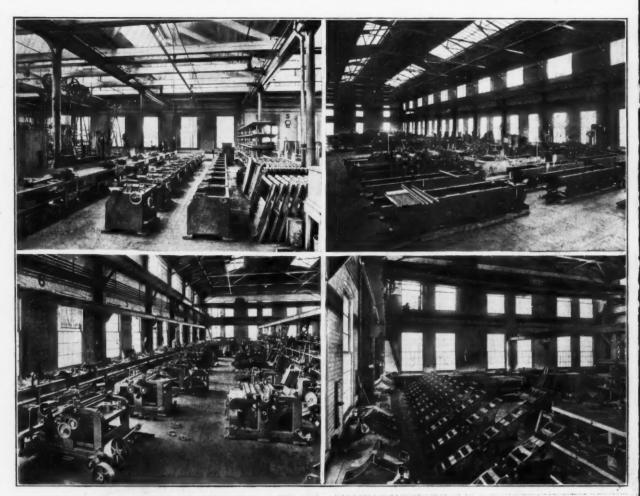


Fig. 10. Universal Saw Bench Assembling. Fig. 12. Surfacer Erecting Floor.

Fig. 11. Planer and Matcher and Timber Sizer Floor, Fig. 13. Jointer Erecting Floor.



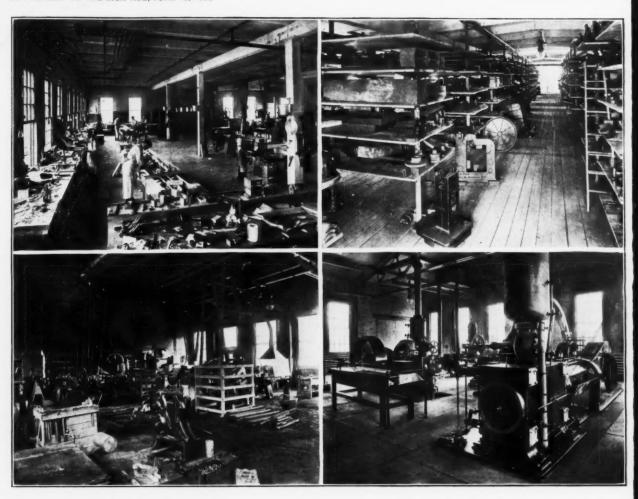


Fig. 2. The Pattern Shop. Fig. 4. The Blacksmith Shop.

Fig. 3. The Pattern Storage. Fig. 5. The Engine Room.



Fig. 6. The Foundry, Showing the Cupolas, Sand Room and Core Department.

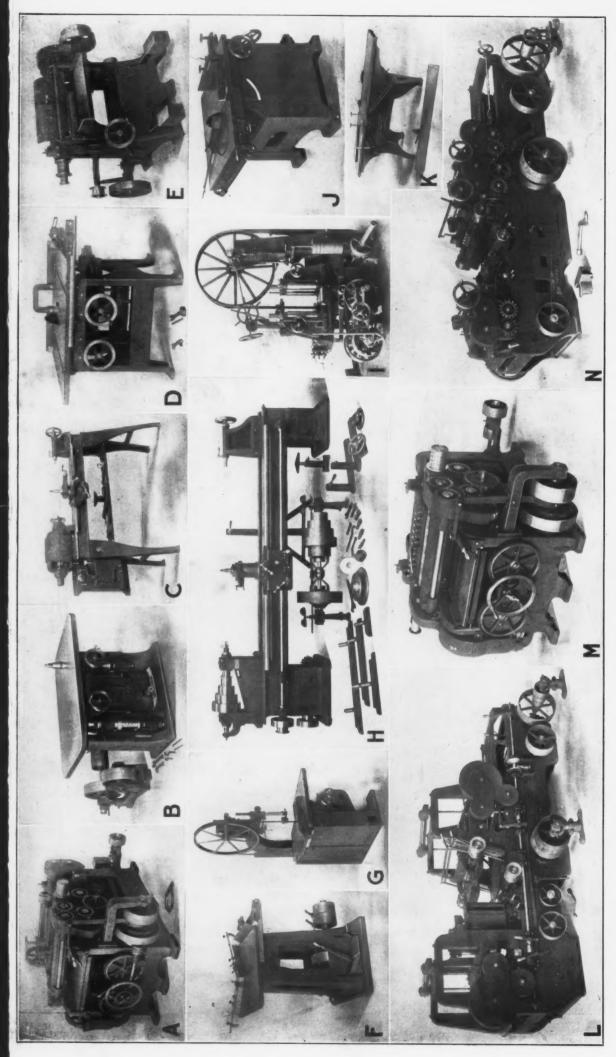


Fig. 7. The Foundry. Showing the Cleaning Room, Sand Blast Room, Small Molding Department, and a Part of the Main Bay.



Fig. 8. The Erecting Shop in the Main Aisle of the Machine Shop Building.

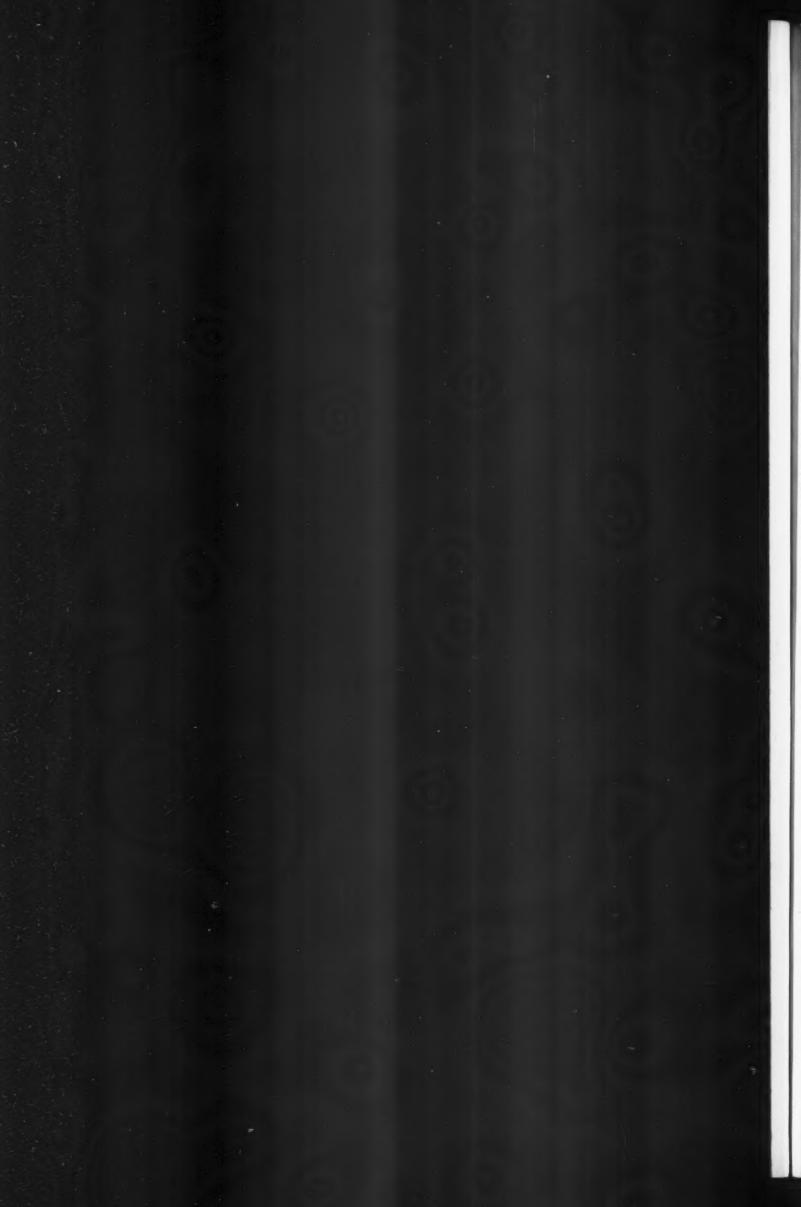




A—Six-Roll Double Surfacer; B—Two-Spindle Shaper; C—Motor Headstock Speed Lathe; D—Double Saw Bench; E—Single Surfacer; F—Mitre Saw Bench; G—Patternmaker's Band Saw; H—Patternmaker's Lathe; I—Band Resaw; J—Universal Saw Bench; K—Hand Jointer; L—American Boss Timber Sizer; M—Single Surfacer; N—Six-Roll Planer.

FIG. 14. TYPICAL PRODUCTS OF THE AMERICAN WOOD WORKING MACHINERY COMPANY'S ROCHESTER BRANCH





trusses. In place of the ordinary monitor skylight there are inclined skylights in the roof of both the center and side bays, and ventilation is obtained by roof ventilators controlled by dampers. The illustrations show these features and also the type of heating apparatus installed. The radiators are sectional cast fron heaters, assembled in tiers between the flanges of the channels in the built-up columns. The radiators are thus disposed, where they are entirely out of the way and yet well distributed to insure uniform heating. Along the walls below the windows are series of ordinary steam pipe coils.

The center bay of the foundry is served by two 5-ton electric cranes and the small molding machine department by a 4000-lb. floor-controlled crane, all built by the General Pneumatic Tool Company, now the Shepard Electric Crane & Hoist Company. The castings made in this department are mainly small ones, such as gears, bearings, caps, brackets, &c. To the north of the bench molding department is the sand blast room, which contains an American Diamond sand blast apparatus, furnished by Thomas W. Pangborn Company, N. Y. Beyond this is the cleaning room, which contains five tumblers, two double grinders, and one swing grinder, all driven by a 25-hp. Crocker-Wheeler motor.

The small bay on the opposite side of the foundry contains the wash room and lockers, core department, sand room, cupolas, and the blower room. In addition to the large built-in core ovens, which are directly behind the core department, there is an Eli-Millett small core oven. Common forms of cores are made by a motor-driven core machine in the core department. In the sand room, next adjoining, are a Hanna pneumatic screen and a motor-driven sand mixer, made by the Standard Sand Mixer Company. The motor is a $3\frac{1}{2}$ -hp. Crocker-Wheeler motor.

The two cupolas were furnished by the Whiting Foundry Equipment Company. One is a No. 4, 56 in. in diameter, and the other a No. 7, 72 in. in diameter. The two have a combined capacity of 16 to 19 tons per hour. Blast for the cupolas is furnished by a No. 51/2 Root blower, driven by a 30-hp. Rochester motor in the blower room, next to the cupolas. This room also contains an Ingersoll-Rand 121/4 x 12 in. class E, belt-driven, singlestage compressor, connected to a 42 in. x 8 ft, vertical air receiver and driven by a 45-hp. Rochester motor. Compressed air is used at a pressure of about 90 lb, to supply the sand blast room and the molding machines, and also for blowing out molds and for cleaning and chipping castings. The machine molding floor at the south end of the foundry contains two Tabor molding machines and a Tabor pulley molder. There is also one more machine in the small molding department. The ventilating system in the foundry was installed by the Empire Blower and Pipe Company.

Power Plant and Forge Shop.

Between the foundry supply storage and the machine shop is the fireproof building containing the engine room, boiler room and blacksmith shop. The building, 146 ft. long x 48 ft. wide, is flanked on one side by a coal storage of 250 tons capacity.

The blacksmith shop, of which Fig. 4 is an interior view, contains a centering machine for shafting, a cutting-off machine, a Bradley 1800-lb. power hammer, power shears, hacksaw, Taft rolling lever shears, bolt cutters, Doty punch and shear, four emery grinders, Perkins power press, tool grinders, seven Buffalo forges, a No. 5B Buffalo blower, and a 24-in. exhaust fan for removing the gases, all driven by a 15-hp. Westinghouse motor.

In the boiler room are three Keeler dry tube boilers, which have a capacity of 150 hp. each and are fitted with Diamond tube blowers. The feed water is heated in a No. 27 Cochrane heater and delivered at a temperature of 208 degrees to the boilers by two 6 x 4 x 6 in. Worthington duplex steam pumps. Two boilers carry the normal load and one is held in reserve. The coal bin is on a level with the boiler-room floor, and below the track level outside, so that the coal can be dumped from the cars directly into the openings in the top of the coal bins.

The engine room, as Fig. 5 shows, contains a Hamil-

ton Corliss 20 x 42 in. engine, running at 100 rev. per min., and directly connected to a 200-kw. Crocker-Wheeler generator, and a Skinner high-speed 15 x 16 in. engine, running at 250 rev. per min., directly connected to a 100-kw. Crocker-Wheeler generator. Ordinarily the larger unit supplies the load, the smaller one being a reserve for extra demand or a substitute for the larger engine when the demand for power is small. The two together have a combined capacity of 500 to 600 hp. There is space for the installation of another unit of the size of the larger one. Both engines are oiled by a White Star gravity system, the oil from which is returned to a filter and forced back to the supply tanks by a small duplex steam pump, having a capacity of 150 gal. per day.

In the engine room is also a Worthington Underwriter duplex fire pump, having a capacity of 1000 gal. per min. at 100 lb. pressure. Its suction is connected to a concrete reservoir south of the engine room, which has a capacity of 150,000 gal. The water is then forced through the mains to supply in all 2100 sprinkler heads, as well as the five housed hydrants located about the grounds, as indicated in Fig. 1. Each hydrant has attached to it 150 ft. of fire hose, ready for instant use. About once a month a fire drill is held, but not on any regular day or time, so that the force is not prepared by previous knowledge as to when it will occur. Each department has its own fire brigade chief, with assistants under him.

The Machine Shop.

The largest and for some reasons the most interesting building is the one which contains the machine and erecting shops. At present the erecting shop is a broad aisle on the west side of the shop, surmounted by a sky-lighted roof, and the remainder of the building has a saw-tooth roof to give north light without direct sunlight. Eventually the building will be extended by a similar bay flanking the main aisle on the other side. The machine tools are mainly placed under the sawtooth roof part, and so far as possible are grouped according to their classes, about as is indicated in the plan Fig. 1. The erecting floors are similarly divided into departments, covering each class of machines built, and each different class has its own foreman and gang of men, who are specialists in building that particular machine. The building is at present 184 ft. wide x 572 ft. long, and has excellent natural light, as may be judged from the various views given in Figs. 8 to 13 inclusive. As the key on the plan of Fig. 1 explains, the points of view from which these different photographs were taken are indicated, so that keeping this in mind the reader may obtain a pretty good conception of the

The erecting aisle is traversed by two Shaw electric cranes, one of 10 and the other of 15 tons capacity. Both cranes have a span of 58½ ft. and a hoist of 25 ft. The north end of this aisle is divided in halves, longitudinally, and each half is served by four 2-ton hand traveling cranes on lower runways. These were furnished by the Reading Crane & Hoist Company and the Shepard Electric Crane & Hoist Company. There are also two portable cranes, furnished by William S. Nicholls. A trolley system supplements the cranes, serving the machine shop proper, and carries Yale & Towne 1-ton Triplex blocks. The industrial railway system connects the crane and trolley service with the other buildings and at one point contains a platform scale.

A wide passage divides the machine shop section. Passing down this aisle from the north end the turret lathes are on the left, forming a department by themselves, and the planer section on the right. Near the turret lathes are specially designed racks to hold bar stock of different sizes. The turret lathes are all furnished with oil pumps, so that oil drills may be used, which are very important in the machining of steel cutter heads, of which large numbers are made. On the right side, directly beyond the planers, are the milling machines, and facing them the thread millers used to make the special screws which enter into the different machines. Soda water tanks and oil filters are con-

veniently placed, so that work may be cleansed before being sent to the different erecting departments.

The next section on the left is the lathe department. The lathes are placed in groups of about eight or 10 and each group is driven by an independent motor. dividual lathes are generally kept on one line of work, such as shapers, resaws, surfacers, &c., so that the workmen on these tools become proficient. Among these lathes are several special machines for certain lines of work. One is a double end lathe with a very powerful drive, which is used for roughing out cylinders or cutter heads. Another is used for grinding resaw wheels and is a massive machine, automatic in action and capable of very fine adjustment. Beyond the lathe department is the pulley and gear department, where stock parts of these kinds are made and then sent to large racks near the erecting floors, where they are needed. Similarly there are several departments devoted to drill presses. Running the length of each of the drill press bays are shelves containing drilling jigs. The work is thus done in quantities very rapidly and the several departments requiring the drilled and tapped parts are easily kept

The larger planers project into the main aisle, where they have the service of the electric traveling cranes, while the smaller ones and the other machines in the machine shop section proper have the trolley and hoist service before mentioned. At about the middle of the right side of the shop is the stock room and tool room. and beyond, on the left of the passage, are the boring mills, and on the right the shapers. The small machine erecting floor is near the south end, under the saw-tooth roof section. The tool room has a complete compliment of machines for making all kinds of special tools. The stock room adjoins it and is under separate supervision. Here are kept all supplies, both raw and finished, for the machine and erecting shops.

Tool Equipment.

The following summary of the tools contained in the machine shop gives striking evidence of how extensive is the equipment. It is a somewhat remarkable collection, considering the number of different makers represented. In fact the shop affords an excellent chance of comparing the various makes of machine tools and studying particularly the usefulness of each in specific applications. The tools are not all, nor very largely, new ones; some of them are no longer built and many are not the latest types of their builders, for the old shops supplanted by this one have contributed to the present outfit. Even the old tools, however, are interesting, as they all attest their enduring qualities. In the new shop no tools were retained that had outlived their usefulness or even ceased to be efficient work producers.

Of all kinds of drills, including radial, upright, sensitive and electric, there are 51, these being of Bickford, Reed, Warren, Prentice Brothers, Cincinnati, Blaisdell, Dwight Slate, Snyder, Sweetser & Merritt, F. P. Michael, W. P. Davis, C. H. Baush & Son, Barnes and Hoefer makes. There are 14 shapers: Steptoe, Hendey, L. S. Graves, Lodge & Davis, Walcott, Smith & Mills, and Stockbridge, and 40 planers: Woodward & Powell, Pond, Pease, Rochester, Whitcomb-Blaisdell, Cincinnati, and Gray. The largest planers are a Cincinnati 62 x 48 in. x 18 ft. planer, having two heads; a Gray 30 x 36 in. x 10 ft. planer, with power rail elevating device; a Cincinnati 56 x 42 in. x 12 ft. double head planer, and a Whitcomb-Blaisdell 30 x 30 in. x 12 ft. planer, with two heads. The milling machines, 17 in all, are Brown & Sharpe, Gould & Eberhardt, John L. Bogart, Garvin, Pedrick & Ayer, Becker-Brainard, Whitney Mfg. Company, and Pratt & Whitney makes. Lathes, including engine, pulley and turret lathes, are 73 in number, and of Le Blond, Jones & Lamson, Bullard, Blaisdell, Bogart, Reed, Parker & Knight, Lodge & Davis, Gisholt, Bridgeport, Prentice Brothers, Flather, F. S. Perkins, Springfield, Stevens, Fay & Scott, Hendey, Streit, Bridgford, and Draper types. The Stevens and Streit lathes are pulley lathes. The largest lathe is 36 in. x 10 ft. and the longest is 32 in. x 12 ft. There are two vertical boring mills of Colburn make. Other machines include a keyseater, worm

cutter, back saws, balancing lathes, cutter head and pulley balancing machines, belt-lacing machines, pulley groover. &c.

Other equipment than machine tools proper includes 15 arbor presses and a hydrostatic wheel press, 29 grinders, including tool, cutter, drill, universal, emery, reamer and cutter, grindstones, electric, center, plain, disk and the special grinder of the company's own make for grinding the surfaces of band wheels, mentioned before. The grinders represent the following makes: Diamond, Springfield, Gould & Eberhardt, Brown & Sharpe, Putnam, Brainard, Landis, Keath, Norton, Pratt & Whitney, Garnder, and Hisey-Wolf. Several of the knife and emery grinders are of the American Wood Working Machinery Company's own make.

In all there are 27 motors in the machine shop of an aggregate rated capacity of about 460 hp. Group drive is employed entirely for the smaller machines and all very large tools are individually driven. The motor manufacturers represented are the General Electric Company, the Rochester Motor Company, the Crocker-Wheeler Company and the Westinghouse Electric & Mfg. Company.

Erecting Shop.

The erecting shop strictly includes more than the main aisle at the west side of the building. There is a small erecting machine floor at the south end of the sawtooth section, as indicated in the plan. In general the erecting floors are divided, each to take care of one class of machines, of which there may be from 24 to 48 on the floor at a time. The workmen on these tools each have their particular part to perform and follow one another in the progressive assembling of the machine. In this way each one becomes more expert and rapid. The assembling bays are lined with shelves containing the finished smaller parts for the machines being constructed. All of the larger machines, such as sizers, planers and matchers, molders, surfacers, resaws, &c., are erected in the main bay, which is 60 ft. wide. The cranes over this bay are capable of carrying the heaviest machines from one end to the other. The testing floor is at the south end of the main aisle and the packing department next beyond it, so that the shipping is done from the south end of the building. Several motors are here used for driving the machines under test.

Products.

To give something of an idea of the work of the Rochester branch, Fig. 14 has been included, which shows a group of machines typical of those built at this plant. These will be identified in the following statement of the complete product manufactured by the company by the letters in parenthesis, which correspond to those in the engraving:

-No. 61/2 double furniture and cabinet six-roll Surfacers.—No. 6½ double furniture and cabinet six-roll surfacers (A) built in three sizes having capacities of 24, 27 and 30 in. wide by 7 in. thick and equipped with solid, divided or sectional rolls. No. 4½ furniture and cabinet surfacers, single (M) or double, four sizes working 24, 27, 30 and 36 in. wide by 7 in. thick, having solid, divided or sectional rolls. No. 1½ single surfacer (E), for pattern and general woodworking shops, working 24 in. wide and having solid or sectional rolls and a table which will lower 7 in. No. 51 30 in. x 8 in. six-roll planing mill and box factory surfacers. No. 50 four-roll planing mill and box factory surfacers, two sizes working 26 and 30 in. wide by 8 in. thick and having divided rolls. SURFACERS .-

-Tripod frame jointers (K) built in seven sizes working from 8 to 36 in. wide. Pedestal frame jointers built in four sizes working 12 to 24 in. wide. The beds of the latter rise and fall on four short inclines.

Band Saws.—Band resaws (I), three sizes, 48, 54 and 60 for cutting timbers to dimensioned stock, resawing veneers and similar work, equipped with variable cone feed. Patternaker's band saw (G), 36 in., with table tilting 45 deg. to the right and 5 deg. to the left, and the lower wheel enclosed.

INSIDE MOLDERS.—Four sizes working 8, 10, 12 and 14 in.

wide by 6 in. thick.

FLOORING MACHINES.—No. 60 fast feed flooring machines working 104 ft. of flooring per min., built in three sizes taking 9, 15 and 24 in. wide by 6 in. thick and having six powerfully driven rolls all preceding the cutter head to avoid marking or marring the finished product. No. 55½ special flooring machines, two sizes, 10 and 14 in. wide x 6 in. thick and having six rolls the same as No. 60. No. 54 planer and matcher (N), two sizes working 14 and 24 in. wide by 6 in. thick and having six rolls, four rolls in advance of the cutter head and one six rolls, four rolls in pair of out-feeding rolls.

TIMBER SIZERS .- For dressing dimensioned stock, car sills,

factory flooring, etc. Built in six and eight roll patterns. The first, four sizes, work 12 and 14 in. thick either 20 or 30 in. wide; the 30-in. machine has divided rolls, and the 20-in. machine solid rolls. The eight roll machines (L), six sizes, work 16, 18 and 20 in. thick by 20 or 30 in. wide; the rolls are solid in the 20-in. machine and divided in the 30-in.

LATGES.—Heavy patternmakers' lathes (H) with 20, 26 and 32 in. swing having 16, 12, 14 or 16 ft, hedge and power food and

in. swing having 16, 12, 14 or 16 ft, beds, and power feed and compound rest. When desired, these are arranged for motor

drive application.

SPEED LATHES.—Built with 12 in. swing, 55 and 72 in. beds and with plain bed, or with carriage and compound rest. Those with motor driven headstock (C) are equipped with General Electric motors of special design,

Back Knife Lathes.—Three styles,—No. 1½ built in four sizes working 28, 36, 45 and 52 in. long; No. 2 in two sizes working 40 and 50 in. long, and No. 3 in two sizes working 40 and 50 in. long. These machines are used for turning ballisters, chair rails, rungs, table legs, and a variety of other

BENDING PRESSES .- For bending chair backs and other regular curved work where the diameter is from 30 to 42 in. and the material not over 11/2 in. thick.

BORING MACHINES.—Double horizontal boring machines with radial attachment for boring holes in chair backs or other similar work, built in two sizes. Triple dowel boring machines for boring three dowel holes at once. Multiple boring machines for boring three dowel holes at once. Multiple boring machines for table leaf and similar work. Vertical three-spindle car borer. Double vertical chair borer. Bit mortising machine used

Dower Machines.—For turning dowels and rods from 3-16 to 2 in. diameter, equipped with either hand or power feed.

Saw Benches.—Universal saw benches (J) for pattern making and similar work, carrying a cross cut and a rip saw and if desired a dado head, and having a table tilting to 45 deg. to the right, a graduated sector in the table which enables the operator to cut any angle without figuring it out, and a rolling segment in the left hand table. Double saw bench (D) having both saws but without the tilting table, and arranged to receive boring attachments. Rip saw tables built in two sizes, light and heavy. No. 2 combination saw benches with or without heaving attachments are decreased. out boring attachments and carrying dado heads. No. 1 saw benches with or without boring attachments and carrying dado heads. No. 1 saw bench—a variety saw bench—equipped with or without boring attachments and having a table tilting to 45 deg., and carrying a dado head or plain heads which will carry jointing, grooving and rabbiting bits. No. 0 saw bench made with stationary or tilting table. Mitre saw bench (F) having graduated scales on the four corners for setting gauges to cut any angle up to 45 deg. in any direction, or arranged as a plain cut-off saw only. Clipper saw for cutting off the butt ends of flooring and similar work as it leaves the matcher.

SHAPERS.—Three styles, No. 3, extra heavy with two spindles 30 in. apart; No. 2½ double spindle shaper (B) with spindles 24 in. apart, built either with plain or bronze conical bearings, and equipped with an adjustable countershaft and an adjustable guide stand; and No. 1 single spindle shaper with friction reverse countershaft.

Such an array of product apparently contradicts the statement made earlier that this plant specializes, until it is remembered that it was also explained that the individual workmen are kept on the same kind of work and under the same foreman, who has charge of building only one class of machine. It is practically as though there was a separate factory for each type of machine. This arrangement is possible because, while there may be certain sizes that are only occasionally made, each class is always represented in the work in progress. This system of managing it is quite as much a credit to the American Wood Working Machinery Company as the factory itself.

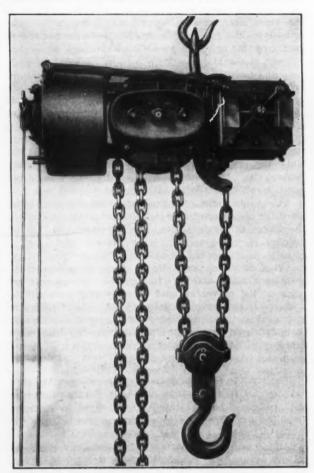
Foundry Sand Conveying.-In the article on the above subject which appeared in The Iron Age last week a typographical error appeared in the sentence, "The illustrations, Figs. 1 and 2, show the details of such a conveyor, which consists of a trough for holding the material, surrounded by a steel frame on wheels, which carries hinged flights extending down into the trough." word "surrounded" should have been "surmounted." It was also a mistake to say that the gate mechanism in the installation in the Atha Steel Casting Company's foundry was like that indicated in Figs, 1 and 2. As a matter of fact, it is a modification of the Link-Belt Company's undercut gate, and is so made as to deflect the sand from the delivery point.

The highest point in Texas has been found by the United States Geological Survey to be located in the Guadalupe Range in the northern part of El Paso County, not far from the New Mexican boundary line. The elevation is 8690 ft. above the searand the peak is significantly called El Capitan by the Mexicans.

A Northern Electric Hoist.

Wherever it is possible or convenient to use a hand chain block, the type C electric hoist made by the Northern Engineering Works, Detroit, Mich., can be used, as it is practically an ordinary hand chain block adapted for motor drive. The hoist here illustrated is a redesign of the original C type placed on the market three years ago in which the distance between the suspension and lifting hooks has been reduced to obtain higher lifts under low ceilings; it is also made for either direct or alternating current.

Being equipped with a crane motor and standard controller capable of wide range of control and ample resistance, the hoist can be operated at fast or slow speed, ranging from five to ten times the speed of a hand To provide for the severer service to operated hoist. which the power hoists are naturally subjected they are built about double the size and strength of hand hoists



The Redesigned Type . C Electric Chain Hoist Northern Engineering Works, Detroit, Mich.

of like capacity. As compared with some drum hoists, it has the advantage of suspension by a single hook, which gives it a flexibility that enables it to sustain a side pull without pulling the chain out of the sprocket groove.

A direct drive through a set of cut spur gears compactly arranged affords ample power, and wear is reduced to a minimum by running the principal gears in cil. The hoist is recommended for moderate service, especially in boiler shops, machine shops, over tools, in warehouse service, and in some kinds of foundry work. It is supplied with a brake of automatic disk type and can be equipped with motors of any standard make. These hoists are made in capacities of from one to six tons, with standard hight of lift from 8 to 12 ft.

The approximate dimensions of the 1, 2 and 3 ton hoists when equipped with direct current motors are 201/2 in. wide, 46 in. long and 2 ft. 8 in. minimum distance between centers of hooks. For the 4, 5 and 6 ton hoists they are respectively, 24 in., 55 in. and 3 ft., except for the 6 ton, in which the least distance between hooks is 3 ft. 4 in. With alternating current motors the lengths and widths are increased, depending on the make of motor applied.

The American Foundrymen's Association at Toronto.

Molding Machines, Cost Systems, Automobile Cylinders, By-Product Coke and Other Topics Discussed—Working Exhibits of Foundry Appliances.

The Toronto, Canada, meeting of June 8 to 12 was a climax in the convention history of the American Foundrymen's Association. It was thought that going into another country, even but a little distance beyond the border and to a pleasant and accessible city, would cut down the attendance. On the contrary, a new record was reached, the registration on the last day mounting to 1430, as against 1371 in 1907 at Philadelphia, which was considered a phenomenal figure.

There was everywhere the expression of satisfaction with the arrangements at Toronto. Members and guests and exhibitors were well cared for; the city itself was an attraction, and the provision of a separate building at the Canadian Industrial Exhibition grounds, for the technical and business sessions, was a distinct improvement over the arrangement at other meetings where machinery was exhibited. More persons heard the papers read and more took part in their discussion than at any preceding meeting. It is noteworthy, moreover, that the American Foundrymen's Association conventions are now sought for as they have never been. Cincinnati is the meeting place for next year; Detroit is conceded to be in line for 1910, and Pittsburgh wanted the convention of that year, but will probably be satisfied to wait until 1911. while there is a possibility that a Western city, Denver, perhaps, will be visited before a return to Pittsburgh, which was the convention city of 1899.

The grounds of the Canadian Exhibition were an ideal place for the convention, which has taken on much more the aspect of an exposition, now that the operation of molding machines and all other foundry equipment is made so prominent a feature. The Foundry Supply Association, at a large expenditure of money, sets up these working exhibits and aids in defraying the general expense of the convention and its entertainment features. The crowded aisles of the exhibit buildings and the deeply interested and sharply observant groups of foundrymen surrounding every operated machine showed that these demonstrations are the chief magnets of the meeting.

WEDNESDAY MORNING.

The sessions for the reading of papers began Wednesday morning in the Dairy Building, a circular structure with cement floor and the seats arranged to form an amphitheatre. The light comes through skylights in the center of the roof.

At the outset a word is in place concerning the excellent work of the presiding officer, Stanley G. Flagg, Jr., of Philadelphia. Mr. Flagg's technical equipment made it easy for him to start discussion, and the free interchange of views secured on several of the papers was due largely to the good initiative of the president. The traditions of the association do not permit it, but it was suggested at the meeting that when so excellent an executive is secured and one with progressive ideas as to the province of the association, much might be gained by keeping him in office two or three years.

Automobile Cylinder Work.

Secretary Moldenke read the paper on "The Production of Automobile Cylinders," by L. N. Perrault, manager of the Waterbury Casting Company, Waterbury, Conn. It is given elsewhere in this issue.

E. H. Mumford said that he had no idea of the care used in the preparation of cores and molds for automobile cylinder work until he had specially looked into the matter. He recalled being shown a core that had just been used in such work and wondered at the foundry superintendent breaking it in pieces. The fact that it had a very small pit on one side ruined it for gas engine purposes, though this would not have prevented its re-use in ordinary work.

J. J. Wilson, Cadillac Motor Car Company, Detroit, Mich., referred to the pickling of automobile cylinders as having advantages and disadvantages. If the core sand is not all out of the water chamber, which it is impossible to ascertain without breaking up the casting, the pickle will harden the sand and later treatment will not remove it. Tumbling will jar it out, however, where there has been no pickling, particularly if the tumbler has been packed by an expert, in which case cleaner cylinders can be got than by pickling. The speaker had noticed variations in the analysis of automobile cylinders made in France from those of cylinders made in the United States. He had had a number of analyses made of French cylinders, the silicon ranging from 1.64 per cent. to 2.30 per cent., and the phosphorus from 1.20 per cent. to 1.70 per cent. A cylinder having the last named phosphorus content would be weak and brittle and would not withstand much shock. In the United States the phosphorus in cylinder castings is considerably less, ranging from 0.30 to 0.60 per cent., while silicon runs from 1.50 per cent. to 3.00 per cent., with manganese from 0.50 to 0.90 per cent. In sulphur the French and American castings run about the same, though the latter are usually a trifle lower. Analyses of French cylinders had shown 0.09, 0.10 and 0.11 in sulphur. In reply to questions, Mr. Wilson said that he had used manganese for cylinder castings, sometimes introducing it into the ladle and sometimes in the cupola. He preferred buying pig iron with sufficiently high manganese to introducing the manganese separately into the cupola mixture or into the ladle. It was suggested by a member that it would be difficult to secure sufficient strength in cylinders of thin section carrying as high sulphur and phosphorus as the French cylinders; in reply it was said that French cylinders are not subjected to the same shock as American.

The Chemistry of Cylinder Mixtures.

W. A. Jenkins, Oldsmobile Company, Lansing, Mich., presented the analyses of 12 automobile cylinders, one of which, No. 3, was made in France and the others in the United States. These analyses as published in an automobile trade journal are as follows:

	Total						Tensile strength
No.	carbon.	C. C.	Mn.	S.	81.	Phos.	Lb.
1	3.35	.51	.43	.094	2.31	.05	22,360
2	3.02	.43	.22	.053	2.70	.463	18,970
3	Fr. 3.47	.40	.40	.102	2,45	.717	17,940
4	3.34	.10	.469	.083	2.59	.566	15,880
5	3.04	.08	.322	.10	2.55	.820	19,750
6	3.24	.098	.385	.111	2.67	.733	23,930
7	3.34	.59	.525	.084	2.30	.807	22,900
8	3.74	.65	.410	.083	1.60	.536	. 18,460
9	2.87	.028	.440	.159	3.56		25,030
10	3.52	.624	.476	.091	1.72	.578	25,260
11	3.91	.62	.823	.068	1.67	.444	21,330
12	3.61	.75	.518	.093	1.38	.620	14,710

In answer to a question Mr. Jenkins said there was no specification as to hardness, though in his opinion it is possible to get too soft iron for cylinder work in the effort to get castings that will machine readily.

French and American Practice Compared,

F. W. Stickle, Hartford, Conn., who was on the programme, presented a verbal contribution. Analyses of the castings made in his shop, taken six months apart, showed the following:

	Total					
	Carbon.	C. C.	Phos.	Mn.	8.	Si.
April, 1907	3.17	0.45	0.65	0.39	0.13	1.99
October, 1907.	3.34	0.76	0.70	0.39	0.09	1.89

No tensile tests are made, but all test bars are broken transversely. The aim is to get iron with the greatest elastic limit, since the withstanding of shock is an important factor. Iron with high tensile strength is not adapted to such usage. With a 1-in, test bar, 12 in, between supports, cast iron of the above analyses showed 3800 lb., breaking strength with deflection of 0.15 in. The speaker gave the following analysis of a French cylinder used on a Mercedes car, the principal difference from his

own cylinders being in the higher phosphorus: Total carbon, 3.36; combined carbon, 0.10; phosphorus, 0.83; manganese, 0.60; sulphur, 0.09; silicon, 2:29. The higher phosphorus content in the French cylinders Mr. Stickle considered to be a great detriment. Apparently straight pig iron of one grade had been used, and there was not a mixture of irons as in this country. The trouble the foundryman has with this automobile work is to get iron that will run well between the cores and at the same time give a sound, strong casting. If an automobile manufacturer finds in such a casting a hole as big as a pin head he sends it to the scrap heap. The speaker had examined foreign cylinders that would never get through the inspection rooms of the automobile manufacturers of the United States. Formerly at the plant the speaker represents, rings and cylinders were made from different irons, but now the same mixture is generally used. The aim is to get the cores out thoroughly before pickling the cylinders, as it is found that cores get pasty in this operation. It was hard to get a mixture that would free itself, though success has now been attained in this regard.

A question came up as to the ratio of the transverse and tensile strength of cylinder test bars, and the speaker answered that it was about 1 to 9. The statement of A. E. Outerbridge, Jr., that usually the ratio between transverse and tensile strength of cast iron is between 1 to 8 and 1 to 10, was referred to, and W. J. Spencer, Philadelphia, said that he more often found it 8 than 10. A member, referring to Mr. Stickle's report of 3800-lb. transverse strength, said that he himself had not been able to get more than 2800 lb. from test bars of practically the same analyses as those Mr. Stickle had given.

Molding Machines.

- E. H. Mumford, Philadelphia, was on the programme to open the discussion on "Molding Machines," and he did this by presenting the following questions:
- Is there anything by which to appraise a molding machine other than the ratio of value of castings produced to cost of production?
- 2. When do portable molding machines pay better than sta-
- tionary machines? Why?
 3. When do stationary molding machines pay better than portable machines? Why?
- portable machines? Why?

 4. What part of the work of machine molding is getting sand to machines and getting the molds off the machines to the floor (a) in hand rammed or portable machines? and (b) in power rammed or stationary machines?
- rammed or stationary machines?

 3. What increase of output is afforded stationary machines by power sand supply over that when sand is shoveled from the heap?
- 6. What increase of output is afforded stationary machines by immediate disposal of mold parts, so that the operator does not have to set and close his own work on the floor?

 7. What does power sand supply cost per machine?
- 8. What does off-bearing of molds by off-bearers or power
- mold tables cost?

 9. What is the limit of depth and the size of flask at which power ramming by pressure ceases to pay?
- 10. What is the limit of depth and weight of mold at which jolt ramming ceases to pay?

Mr. Mumford read a letter from one who had had considerable experience with molding machines and who considered that progress with them had been slow. Had they been introduced as aids to molding and not purely as machines, the writer thought greater results might have been reached by this time. He took the view that too much had been expected from the machine itself, and said that the sooner the idea was eliminated that any laborer can take a molding machine and produce better castings than a molder, and that in a short time, the better for the future of the machine.

Prefacing his remarks by saying that he had introduced the questions read for the purpose of drawing out the views of others, Mr. Mumford asked whether there is not a commercial basis on which the molding machine may be better operated by a molder than by untrained labor. The question of the labor ethics of the molding machine is a very important one. The manufacturer often says, "Will my molders stand for it if I put in the machine?" and thus the question comes up, how can a basis be arranged by which the foundrymen in introducing machines will give the molder a square deal and vice versa? Mr. Mumford suggested that it might even be possible to give the molder operator some share in the profits of the molding machine.

A very general interchange of views followed. The point was brought out by one speaker that the present more tolerant attitude of the molder toward the machine simply resulted from the success attained with the machine in spite of the molder's long unwillingness to use it. On the other hand it was argued that if the molder is now willing to meet the manufacturer half way and to give the molding machine a square deal, this is the time to make an arrangement with him. The question was asked what other advantages than his skill in pouring are to be obtained by employing the molder on machines. Mr. Mumford replied that on small castings there is probably no other advantage, but that on large and more intricate castings the differentiation of the ramming of various parts of the mold gives place for the skill of the molder. A Canadian member said that the nub of the whole question was limitation of output. This, he felt, could never be submitted to: but if the molder were willing to take off the limitation of product, then perhaps the foundrymen might be willing to consider him as a machine operator.

S. C. Gale, Pennsylvania Malleable Company, Pittsburgh, believed that if the molder would take hold of machine work with the same spirit that he showed in hand work there would be a very much smaller contribution to the scrap heap. The difficulty he had encountered after every effort to adjust machine work on a fair basis and to distribute the tasks of setting cores, tempering sand, &c., and using picked men, was that when the molders reached on the machine the same output that they had formerly regarded as a day's work with hand labor they thought their day's work finished.

G. S. Custer, Hamilton, Ohio, remarked that the pouring of the molds was an important factor in connection with machine work. A man cannot be expected to make 300 molds a day on a machine, then pour the molds and shake out. It is a physical impossibility. Where a man performs the variety of operations above referred to he should have more pay than for performing one. When a machine operator becomes thoroughly broken in to that work, it will be found that he will prefer a hand job to the machine job, and this is natural. The speaker emphasized the point that it should be made an object to a man to take hold of the machine and work up to the large outputs expected from its use.

Abram C. Mott, Abram Cox Stove Company, Philadelphia, said he had been much struck with the way in which the molding machine absolutely did away with the molder's duty. The drawing of the pattern by a machine represented the grand elimination of the molder's work. He had noticed, however, that the molding machine men in demonstrating the capabilities of a machine, do not go to New York and hire a newly arrived immigrant to show the manufacturer what a handy man can do. As men become proficient on the machine as demonstrators they are advanced to \$5, \$6 and \$7 a day. It is not surprising that the molder opposes taking up the machine at the same pay as before. The molding machine requires a molder. In teaching a handy man to operate a machine you make a molder. It has been the history of all machine introduction that the operator receives more than his predecessor who worked by hand. The chauffeur gets more than the coachman. It is reversing all history to attempt to introduce a machine at a decreased price for the operator. It has come to be the habit to fight over 5 cents on the price of work in the shop, while a cut of \$1 by the selling department causes no comment.

WEDNESDAY AFTERNOON.

The discussion on molding machines was resumed at the afternoon session, the first question raised being "What part of the work of machine molding is getting sand to the machine and getting the molds off the machine to the floor?" No very definite data were brought out in answer. S. S. Knight told of an experience with the molding of soil pipe tees. The actual molding operation amounted to 50 per cent. of the cost. It was found in this particular work that it was impossible to get the sand to the machine and the molds away from the machine and poured at anything like a fast enough rate to get the full capacity of the machine.

Chairman Flagg called attention to the effect of the various operations connected with machine molding upon the character of the sand. Oftentimes the sand balls in a horizontal conveyor, the clay separating from the silica. Where machine operations are multiplied and a large number of men is involved the gain from machines is not so great as might be inferred from the result with a single machine. In this connection Dr. Moldenke remarked that in German foundries much is being done of late in the direction of sand handling economies. Very soon much data should be available from Germany on this subject.

Lazard Kahn, Hamilton, Ohio, was asked to speak of the molding machine from the standpoint of a stove manufacturer. He said that if he could make dividends for his stockholders by making stoves on the floor he would have nothing to do with the molding machine. He could not say that his company had thus far done itself a great deal of good by introducing the machine; yet it had done something in aiding a scientific movement that in the end will be of general benefit. Ultimately the chief beneficiary of the molding machine will be the molder himself. The day may come when the skilled molder will direct the machine operations of others not his equals in skill. With from 250 to 500 pieces in a stove the application of the machine to that industry has special problems, and the case is not nearly so clear as with work on single pieces like tees, where there are many to make and all are alike. There has never been a time when a man who took up the operation of the machine did not earn more money than when he worked by hand. Moreover, it is absurd to think that when we have made a smart machine workman we are ever afterward going to deal with him entirely apart from organizations which from their standpoint are seeking the same things for their members as manufacturers are seeking when they come together in associations.

The Prevention of Foundry Accidents.

After the secretary had given a synopsis of the paper of W. M. Carr on "Annealing Steel Castings," published in The Iron Age of June 11, page 1871, and of the paper by H. E. Diller, Chicago, on "Specifications for Castings to be Machined," Thomas D. West read a brief paper on "The Prevention of Accidents in the Foundry." summarized the chief causes of such accidents, the difficulty of securing proper care on the part of operatives and the necessity of improving the shop organization in addition to the installation of proper safety devices. Mr. West spoke of the work of the Anti-Accident Association which he recently organized at Sharpsville, Pa., and suggested that the American Foundrymen's Association investigate the subject of accidents in foundries with a view to reducing their number and securing a more general observance of safety requirements. Acting on this suggestion the association at its Friday morning session authorized the appointment of a committee to take up this

Coremaking.

In a paper under the above title, A. M. Loudon, Elmira, N. Y., summarized his experience with a variety of cores, giving their composition and the proportions of old and new sand and binder.

Titanium in Cast Irop.

Secretary Moldenke presented the results of his investigation of the effect of ferrotitanium on cast iron, in a paper which is given in full elsewhere. Referring to his investigation of the effect of vanadium on cast iron, presented a few months ago, the secretary noted a contrast in the action of vanadium and titanium. By the addition of a small percentage of the former the strength of white iron was increased 50 per cent., while with a similar addition to grey Iron the strength was increased but 18 per cent. With similar additions of titanium the above increases of strength were reversed—that is, with grey iron the increase was about one-half, and with white iron only about one-fifth.

F. C. Everitt, Trenton, N. J., read a paper on "Foundry Warehouse Methods," to which more extended reference will be made in a later issue. The secretary read by title the other papers on the programme of the afternoon,

including "Ferro Alloys in the Foundry," by W. M. Saunders, Providence, R. I.; "Pattern Making for the Specialty Shop," by H. M. Lane, Cleveland; "Oxy-Acetylene Welding of Castings," by G. H. Taylor, Philadelphia.

The following Committee on Nomination of Officers was announced: H. E. Field, Pittsburgh; B. M. Shaw, Watertown, Mass.; Dr. E. E. Brown, Philadelphia; J. P. Golden, Columbus, Ga.; David Reid, Hamilton, Ont..

THURSDAY MORNING.

A paper on "Cupola Thermics," by S. H. Stupakoff, Pittsburgh, was read by title in the absence of the writer. Secretary Moldenke, in the absence of V. B. Lamb, New Haven, Conn., who was on the programme to give some further data on "Sandless Castings," a subject he had presented at the convention of 1907, told of a trip to the foundry at which casting is being done in permanent molds, according to Mr. Lamb's method. The product is brake shoes. Four M. C. B. brakeshoes per hour are cast in each mold. At present the molds are arranged in line on the floor. Later a circular table or some similar arrangement may be provided. The cost is \$5 a ton less than with sand molds. The mixture contains 30 per cent, pig iron and the balance is brakeshoe scrap. The silicon percentage is 2.25 in the casting. It is necessary to have more silicon than in sand cast brakeshoes, so that there may not be too heavy a chill. The annealing of brakeshoes cast in the manner described is an important part of the process. One secret of success with permanent molds, it was said, is to get the mold almost as hot as the iron. This is done by discarding one or two castings from the first metal poured. It was suggested that foundrymen might find it quite worth while to give more attention to the use of permanent molds.

Ira B. Lesh, Montreal, said that iron chillers should be of the same chemical composition as that of the metal poured into them. Another point is to keep the phosphorus down. He believed that with proper annealing, in addition, the results would be such as to lead to a much larger use of permanent molds in the foundry. The speaker expressed some skepticism as to the wearing quality of a brakeshoe high enough in silicon to keep down the chilling effect.

In the discussion following, the amount of experience brought out indicated a larger attempt to employ permanent molds than was generally supposed. One member told of the use of such molds for gear work without any warping of the molds. Another member, whose product is sash weights, spoke of uniformly unsatisfactory results with chills. He considered the problem to be largely one of heat treatment. The possibilities of molds which would be good for a limited number of castings rather than an indefinite number, was spoken of, and David Reid referred to an experience of 10 years back, when several large castings were made from one loam mold.

Improved Cupola Practice.

A paper entitled, "Chemical Reactions in Foundry Cupola Practice," by Jules de Clercy, Montreal, was read by Louis H. Bacque, Montreal, who is connected with the J. de Clercy Company of that city. The Baillot cupola, which the above company manufactures, was shown in operation in the Machinery Building, and supplied molten iron for the pouring of molding machine molds. M. de Clercy's paper, after discussing at length the reactions in the cupola, referred to the improved practice exemplified in the Baillot cupola, and summarized the conditions most suitable for the proper operation of a cupola as follows:

1. Distribute the blast through several rows of tuyeres, with a view to securing as complete and perfect a combustion as possible of the carbon and of the combustible gases; keeping an even temperature throughout the entire melting zone and taking care to make the cross section of the upper tuyeres much smaller than that of the lower ones, so as to avoid sending an excess of air into the upper strata of the melting zone.

2. See that the position of these tuyeres varies according to the nature of the fuel, according to its degree of average humidity and according to its size, always bearing in mind that any fuel will always act with regard to the blast in the same manner as if it were all composed of pieces of the smallest size it contains; also, that anthracite and dense cokes will have a

deoxidizing power considerably inferior to that of light porous cokes.

3. It will always be advisable to mix in with the blast a stated amount of gases subject to bring deoxidized by carbon at a high temperature, such as steam or carbonic gas. This will prevent the temperatures becoming excessive at points where the combustion is most active, and so preclude the possibility of burning the iron; it will also transfer any excess of heat existing around the lower row of tuyeres, to the upper strata of the melting zone, and in particular to that part of the fuel bed 4mmediately in contact with the metal. As to the manner in which these auxiliary gases are to be procured, it is one of extreme simplicity, for all that is required is to draw them off from the upper part of the cupola itself, just beneath the level of the charging door where they are drawn off by means of an apparatus specially designed so as not to develop excessive temperatures in the blast piping. The result of this is to mix with the air of the blast, not only the carbonic gas resulting from the combustion of the coke and the steam coming from the humidity carried by the fuel, but also a portion of the carbon monoxide, which is just so much more fuel saved, as well as a certain amount of B.t.u's, furnished by the apparent heat of all the gases.

These processes and reactions were turned to practical use by A. Baillot, and so far the results obtained by him, both in Europe and in America, in the various applications he has made of them, have been highly satisfactory. As much as 13 lb. of iron have been turned out per pound of coke, bed included, and the iron has always been found to be of quite a superior quality. In fact, Mr. Baillot has realized in actual practice all the desirable advantages enumerated above and at the same time secured greater speed of melting and increased capacity of cupolas for a given size than was heretofore possible.

The remainder of the morning session was given up to a discussion of the paper, Mr. Bacque answering various questions propounded by members as to the theoretical and actual results of the construction he had advocated.

THURSDAY AFTERNOON.

Secretary Moldenke referred briefly to the paper on "Shop Management," by H. F. J. Porter, New York, the writer being absent.

By-Product Coke in the Foundry.

G. A. T. Long of Pickands, Brown & Co., Chicago, presented a paper on "By-Product Foundry Coke," from which the following extracts are taken:

I claim to-day that by-product foundry coke, such as is produced at the plants named [at Syracuse, Detroit, Chicago and Milwaukee] will give better results with all kinds of iron melted in a cupola, let it be for stove plate, machinery or car wheels, high or low carbon irons. Car wheels require more coke to melt than stove plate or machinery, owing to the use of low carbon irons, and more carbon has to be supplied to the metal, as a mixture going into the cupola is 3.20 in total carbon, and a wheel should contain 3.50 to 3.55 total carbon. The difference must be supplied from the carbon in the coke. Therefore the higher carbon in the coke the less fuel it takes to melt the metal and the better the casting. For instance, I was called a short time ago to investigate a little trouble they were having at a certain plant in the West. On reaching the plant I found they were using the same iron right along, had not got any new iron in five months, and knew the analysis of every car on the ground. They were using 6000 lb. of iron to each charge and 720 lb. of coke, before their iron would be fluid enough to run their castings; but their trouble was in their machine shop. They were using a Connellsville coke which stood 0.98 per cent. sulphur, 83 per cent. fixed carbon, 13 per cent, ash. While I was there they received a car of by-product foundry coke, which ran 0.54 sulphur, 91 fixed carbon, 7.23 ash. After starting this coke going I had to cut down, after the bed charge, to 600 lb. to each charge of 6000 lb. of iron; also increased the scrap 15 per cent., which made stronger castings and remedied all the trouble in the machine shop. In this case the charge of 720 lb. of Connellsville coke contained 7.05 lb. of sulphur and 597 lb. of carbon, while the charge of 600 lb. of by-product coke contained 3.84 lb. of sulphur and 50 lb. less of fixed carbon, although using 120 lb. of coke lose less per charge.

Mr. Long, in reply to a question as to the burden carrying quality of by-product coke, referred to a cupola in which the charging door was 33 ft. from the bottom. By-product coke was used, and had carried 148 tons of iron in 9 hr. To the question, "Why does by-product coke run into slag more than beehive coke?" he replied, "It doesn't."

A Chicago foundryman testified to the good results secured with by-product coke. His firm found that it saved time and coke. On a 15-ton heat he had saved from 25 to 45 min.

Foundry Waste,

Harrington Emerson, New York, addressed the meeting on the above subject, citing many examples of loss in foundry operations which had come under his observa-

tion. These were shown to be due to the lack of a proper cost system, to badly designed castings, to the performance of unnecessary work, to hard iron, to inefficiency in cupola charging and operation, to curtailment of output, to disagreements between employer and employee. The speaker laid emphasis upon efficiency in the operation of the foundry, and laid it down as a principle of general application that the lower the manufacturing cost the higher are individual earnings.

Foundry Cost Systems.

The secretary presented the report of the association's Cost Committee, of which Kenneth Falconer, Montreal, is chairman. It was accompanied by a cost chart prepared for the committee by Harrington Emerson, one of its members. Following the presentation of the report E. M. Taylor, New York, a member of the committee, read a paper entitled "The Development of a Cost System for the Foundry." The committee's report and Mr. Taylor's paper will be presented in a later issue of *The Iron Age*.

P. Kreuzpointner, Altoona, Pa., chairman of the Committee on Industrial Education, presented a progress report, and explained some lantern slides illustrative of apprenticeship conditions in Germany 40 and 50 years ago. Mr. Kreuzpointner referred to the interest taken by public school authorities in Canada and the United States in the matter of industrial training. He also presented a resolution expressing the association's appreciation of such interest and of the efforts of educators to solve the problem of adapting the public schools to the new industrial conditions.

The secretary showed a number of interesting lantern slides illustrating the manufacture of coke as carried on at various plants he had visited in connection with his work for the United States Geological Survey.

FRIDAY MORNING.

The closing session of the association was held Friday morning at 10.30 o'clock. Routine business was transacted. A resolution was adopted indorsing the proposed elimination of numbers in designating the grade of pig iron under the present form of contracts, and favoring chemical analysis alone as a basis of purchases of iron. It was also requested that the American Society for Testing Materials concur in this resolution.

Votes of thanks were extended the various officers for their services during the past year, and to the Toronto committees for their entertainment.

New Officers.

The Nominating Committee presented the names of the following persons for election to office for the coming year. They were unanimously chosen:

President, L. L. Anthes, Toronto Foundry Company,

Vice-Presidents: First District—F. B. Farnsworth, McLagon Foundry Company, New Haven, Conn.; Second District—William H. Parry, National Meter Company, Brooklyn, N. Y.; Third District—H. E. Field, Mackintosh, Hemphill & Co., Pittsburgh, Pa.; Fourth District—J. W. Jeffrey, Ohio Malleable Iron Company, Columbus, Ohio; Fifth District—S. T. Johnston, S. Obermayer Company, Chicago, Ill.; Sixth District—T. W. Sheriffs, Sheriffs Mfg. Company, Milwaukee, Wis.; Seventh District—J. W. Kisslck, Columbus Iron Works, Columbus, Ga.; Eighth District—R. J. Cluff, King Radiator Company, Toronto, Ont.

Secretary-Treasurer, Dr. Richard Moldenke, Watchung, N. J.

Representatives from Cincinnati, Detroit, Pittsburgh and Wheeling, W. Va., presented petitions for the next convention of the association. On motion Cincinnati was recommended to the Executive Committee as the meeting place in 1909. The convention then adjourned.

ALLIED ORGANIZATIONS.

The Foundry Supply Association.

The business meeting of the Foundry Supply Association was held at the King Edward Hotel, Thursday evening, June 11, when the report of the secretary-treasurer, H. M. Lane, was received. At this meeting it was decided to continue the exhibition during Saturday, for the convenience of those who had not had an opportunity

to go over it thoroughly. The following officers were elected:

President, F. N. Perkins, Arcade Mfg. Company, Free-

Vice-Presidents: John Hill, Hill & Griffiths Company, Cincinnati, Ohio; E. J. Woodison, Detroit Foundry Supply Company, Detroit, Mich.; T. W. Pangborn, Thomas W. Pangborn Company, New York; George H. Wadsworth, Falls Rivet & Machine Company, Cuyahoga Falls, Ohio.

Secretary, H. M. Lane, Cleveland, Ohio.

Treasurer, J. S. McCormick, J. S. McCormick Company, Pittsburgh, Pa.

Trustees: J. S. Rayner, Carborundum Company, Niagara Falls, N. Y.; J. S. Smith, J. D. Smith Foundry Supply Company, Cleveland, Ohio; A. D. Backert, Cleveland, Ohio; E. H. Mumford, E. H. Mumford Company, Philadelphia, Pa.; J. H. Whiting, Whiting Foundry Equipment Company, Harvey, Ill.

The proposal to draw up a new constitution was taken up, and a committee will be appointed to take charge of the matter. Consideration has been given informally to the establishment of a credit department of the association.

The Brass Founders' Sessions

The American Brass Founders' Association convened in its final business session Friday morning at 10.30. C. J. Caley, presiding. The committee having in charge the preparation of a new constitution, to broaden the scope of the association work, presented its report, which was adopted as read. There was some informal discussion of a proposal to change the name of the association, but no action was taken. From the beginning the scope of the organization has been greater than its name indicates, rolling mills, electroplating works and all having to do with the non-ferrous metals, being included. The election of officers for the following year ensued, the Nominating Committee presenting the names of the following persons, who were unanimously elected:

President, Charles J. Caley, Russell & Erwin Mfg. Company, New Britain, Conn.

Secretary, W. M. Corse, Detroit Lubricator Company, Detroit. Mich.

Treasurer, John H. Sheeler, Sheeler-Hempsher Company, Philadelphia, Pa.

Vice-Presidents: New England-Wm. R. Webster, Bridgeport Brass Company, Bridgeport, Conn.; Walter C. Allen, Yale & Towne Mfg. Company, Stamford, Conn.; A. H. Warner, E. Stebbins Mfg. Company, Springfield, Mass.; New York and New Jersey-W. L. Abate, Nathan Mfg. Company, New York; Pennsylvania, Maryland and Delaware-Thomas Evans, Eynon-Evans Mfg. Company, Philadelphia, Pa.; Central States-Charles B. Bohn, Allyne Brass Foundry, Detroit, Mich.; Western States-J. N. Gamble, Western Tube Company, Kewanee, Ill.; Northwestern States-W. D. Allen, W. D. Allen Mfg. Company, Chicago, Ill.; Southern States-J. Cessna Sharpe, Chattanooga, Tenn.; Quebec, Canada-Alexander Mitchell, Robert Mitchell & Co., Montreal; Ontario, Canada-N. K. B. Patch, Lumen Bearing Company, Toronto Junction.

The report of the treasurer showed receipts in the past year of \$725 and disbursements of \$479.86, leaving a balance in the treasury of \$245.14. The secretary reported that the present membership is 145, representing 18 States and Territories and Canada.

President Caley announced that an effort would be made to hold joint sessions of the Brass Founders' Association and the American Foundrymen's Association in 1909 as the members of both organizations are interested in general foundry practice, and in discussions bearing on the operations of both the brass and iron foundry.

Separate sessions for the consideration of papers were held by the American Brass Founders' Association on Wednesday forenoon, Thursday morning and Thursday afternoon. The following papers were presented and discussed at these sessions:

"The Electro-Chemical Cleaning of Metals and Its Applica-tion to Commercial Uses," by Chas. H. Proctor, Arlington, N. J. "How to Use Membership Privileges in This Association," by

Andrew M. Fairlie, Copperhill, Tenn.

"The Outside Versus the Inside Man," by W. A. Porter, Toronto, Canada.

"The Efficiency of Brass Melting Furnaces," by F. A. Coleman, Cleveland, Ohio.

The Value of Liquid Fuel in Brass Foundry Practice," by Oil as Fuel," by W. S. Quigley, New York.

Commercial Insulation," by F. H. Dimock, New York. W. N.

"Prolonging the Life of a Crucible," by Dudley A. Johnson,

"The Metallurgy of the Bronze Age in Europe," by W. M. Corse, Detroit, Mich

'The Relation Between the Physical and Chemical Char-rs of Molding Sands," by Dr. Heinrich Ries, Ithaca, N. Y. 'Quality Versus Quantity," by J. N. Gamble, Kewanee, Ill.

Associated Foundry Foremen.

The annual meeting of the Associated Foundry Foremen was held in the Process Building at the exhibition grounds, Monday evening, June 8. In the absence of the president, J. F. Webb, Davenport, Iowa, Vice-President W. S. McQuillan, Warren, Pa., presided. In his opening remarks he laid emphasis on the fact that the objects of the association are purely educational.

The secretary, F. C. Everitt, Trenton, N. J., reported that the finances of the association are in better condition than in previous years and that with a present membership of 469 the association made a gain of 99 in the year. A number of changes in the constitution were adopted by the meeting, these relating particularly to the method of electing officers. The committee on the publication of an association paper reported that the efforts in this direction had not been successful and it was recommended that nothing further be done about the matter. Reports were presented from local associations, some of which were said to be quite active, while others are not flourishing. The associations at Chicago and Cincinnati were reported in a very live condition. The matter of a closer affiliation of the American Foundrymen's Association, the American Brass Founders' Association, the Foundry Supply Association and the Associated Foundry Foremen came up and statements were made by Dr. Richard Moldenke, H. M. Lane and L. L. Anthes. A committee was appointed to confer in the coming year with the Executive Committees of the other three associations so that a mutally agreeable plan of action might be adopted. This committee consisted of A. W. Loudon, Elmira, N. Y.; W. A. Perrine, Philadelphia; H. J. Holmes, Cincinnati; E. W. Smith, Chicago, and F. C. Everitt, Trenton, N. J.

The election of officers resulted in the choice of the following:

President, W. S. McQuillan, Warren, Pa.

First Vice-President, J. Gaffney, Toronto.

Second Vice-President, Eugene W. Smith, Chicago.

Secretary-Treasurer, C. E. Hoyt, instructor in foundry practice at Lewis Institute, Chicago.

District Vice-Presidents: W. F. Grunau, Erie, Pa.; Henry Biegel, Milwaukee; E. W. Smith, Chicago; D. C. Wilson, New York; W. A. Keller, Indianapolis, Ind.; C. A. Olsen, Cleveland, O.; W. A. Perrine, Philadelphia; David Reid, Hamilton, Ont.; John Logan, Cincinnati, Ohio; M. J. Walsh, Montreal, Que.; J. F. Webb, Davenport, Iowa, representing the Tri-City Association of Rock Island, Moline and Davenport.

Mr. Webb, the retiring president, was made an honorary member of the association. Mr. Everitt, after a number of years of able and energetic work for the association, felt compelled to give up the secretaryship. As an expression of their gratitude the members presented him with a purse containing \$150 in gold.

NOTES.

It is interesting to see the appearance at the A. F. A. conventions of a second generation of foundrymen. Among those in attendance at Toronto, whose fathers are now, or have been, active members of the association, were the following: Ralph H. West, West Steel & Iron Casting Company, Cleveland, Ohio; A. E. Pfahler, Model Heating Company, Philadelphia; Abram C. Mott, Jr., Abram Cox Stove Company, Philadelphia; Emmet Dwyer, Michigan Stove Company, Detroit, Mich.; Stanley G. Flagg, 3d, Stanley G. Flagg & Co., Philadelphia, and the younger Walker of the Erie Malleable Iron Company, Erie, Pa.

Japan had five representatives at the convention: Y. I. Kawa, T. Kaishimar and K. Kaishimar of the Tobata Foundry Company, Tobata, Fukuokaken, and B. Nakagawa and L. Hayashi of the Army Arsenal at Tokio, Japan.

The entertainment features were elaborate. First came the reception to the delegates and their wives given by the Mayor, City Council and other officials at Toronto's beautiful City Hall Tuesday evening. There was a steamer ride on Lake Ontario Wednesday morning, a trolley ride to Scarboro Beach Thursday evening and a smoker Friday evening. The ladies were entertained by trolley and automobile rides and shopping excursions, and on Friday evening by a theatre party.

The following committee, representing the National Association of Stove Manufacturers attended the convention and spent much time in investigating the adaptability of the molding machine to stove plate work: Grange Sard (chairman), Rathbone, Sard & Co., Albany, N. Y.; Philip Will, Sill Stove Company, Rochester, N. Y.; Fredk. Sattler, Belleville Stove Company, Belleville, Ill.; B. M. Shaw, Walker & Pratt Mfg. Company, Watertown, Mass.; Lazard Kahn, Estate Stove Company, Hamilton, Ohio.

THE EXHIBITS.

The exhibits of the members of the Foundry Supply As sociation numbered 67, as compared with 70 at Philadelphia last year. Operating exhibits, requiring power, were located in Machinery Hall, while all others were shown in the Process Building. The exhibitors had adequate room for their displays, which in some cases were more elaborate than In Machinery Hall power was furnished by a 125-hp. Evans engine, which also operated generators for electric power. Compressed air at 80 lb. pressure was furnished by a compressor of the Canadian Pneumatic Tool Company. The molding machine exhibits were of particular interest to the foundrymen, while the Baillot cupola, which was operated daily, also came in for a large share of attention. The various displays are described below:

J. W. PAXSON COMPANY, Philadelphia, Pa.: A Paxson rockover molding machine operating on stove fronts; a Paxson-Sawyer metal separator; portable air power sifting machine, with interchangeable sieve; aluminum snap flasks; air or steam power core machine of the plunger type, making cores from % to 3 in. diameter; No. 3 Paxson fan blower; vibrators for brass molding tubs; iron, steel and brass castings, cleaned by Paxson-Warren sand blast machine; Paxson parting compound and miscellaneous

supplies and tools.

JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J.: bago crucibles, retorts, brazing crucibles, phosphorizers and special shapes; also a number of "old soldiers"—pots long in service and such as had been damaged by improper handling; stop-

pers, nozzles and graphite facing.
OSBORN MFG. COMPANY, Cleveland, Ohio: General foundry supplies, molders' tools, brushes, etc.; also the Economy wire wheel for cleaning steel castings.
MERRICK FOUNDRY SUPPLY COMPANY, Toronto, Can.: The Hauck oil burner. Kerosene or crude oil used as fuel. Practical demonstration of skin drying molds and ladles, as well as braz-

W. SLY MFG. COMPANY, Cleveland, Ohio: Exhaust tumbling barrels, cinder mill and iron separator, dust arresting system and pattern gear cutting machine.

GENERAL ELECTRIC COMPANY, Schenectady, N. Y.: Centrifugal air compressor driven by 50-hp. Curtis steam turbine.

KROESCHELL BROTHERS COMPANY, Chicago, Ill.: Kroeschell-

Schwartz gyrating flame crucible furnace, for gas or oil,
CALUMET ENGINEERING WORKS, Harvey, Ill.: Model Calumet
cupola, showing shell extending outside of wind box; turntables,
Calumet air hoist.

HOLLAND LINSEED ON COMPANY, Chicago, Ill.: Core oils. MITCHELL-PARKS MFG. COMPANY, St. Louis, Mo.: No. 2 gravity molding machine, taking in flasks 28 x 44 in. up to 44 in. square, working on machinery castings, grate bars, etc.; portable gravity molding machine, molding cope and drag; combination jar and squeezing machine, operating on stove work 12 x 18 x 6 in. deep. Castings being poured daily with iron from Baillot

cupola

E. H. MUMFORD COMPANY, Philadelphia, Pa.: Plain power ramming molding machines in operation; power ramming split pattern machines; Bonvillain & Ronceray sand mill in operation; hydraulic rollover molding machine, 22 x 32 in. flasks, 13 in. draft, with pump and accumulator and pattern making demon-stration; vibrators, stripping plates, &c.

ARCADE MFG. COMPANY, Freeport, Ill.: No. 1 automatic power

driven molding machine for light work, with sand elevator and dropping attachment; No. 3 modern machine, double table, cope on one side and drags on the other; modern machine, 16 x 24 in. flasks, cope and drag work, with a lifting range of 7 in.; modern rockover for deep work, 12 in. lift, double stand 24 in. table; modern rockover for shallow work; castings shown ranging from plow shares to extremely light gated work in brass and iron.

H. E. PRIDMORE, Chicago, Ill.: Rockover molding machines, rockover drop machines, stripping plate machines, small 16-in. rockover drop machine. The larger machine was on heavy pipe fitting work.

STANDARD SAND & MACHINE COMPANY, Cleveland, Ohio: Spe cial mixing screening, elevating and conveying machinery, in-cluding a continuous batch mixer, motor driven adjustable screen, portable motor driven pulverizer; centrifugal sand pul-verizer and continuous loam sand mixer.

E. KILLING MOLDING MACHINE COMPANY, Davenport, Iowa: Rollover straight molding machine, two 18 x 18 stripping plate machines operating on implement work; rollout molding machine on plow wheels; universal sand table, with direct connected motor; automatic steel flasks; steel jackets for snap flask

BERKSHIRE MFG. COMPANY, Cleveland, Ohio: Berkshire A molding machine, taking a flask up to 14 x 22 in., with sand conveyor and rotary riddle operating on an assorted work in 14 x 18 flask; variety of sample castings, showing work done on the machine.

HAWLEY DOWN DRAFT FURNACE COMPANY, Chicago, Ill.: Hawley-Schwartz melting furnaces—No. 1, class A, 32 in.; No. 3, class D, 60 in.; No. 5, class D, 90 in.; No. 2, class D, 42 in.; castings made with metal from Hawley-Schwartz furnaces in steel, brass, bronze, semi-steel, copper, aluminum and malleable

TABOR MFG. COMPANY, Philadelphia, Pa.: Two 10-in. power ramming molding machines, one molding souvenir ash tray; one 14 x 16 split pattern machine; one 30—8-in. power rollover hinge machine, having flask 29 x 48 in. weighing 600 lb.; 18-8-in, hinge machine molding segment of Tupper grate bar.

CANADIAN PNEUMATIC TOOL COMPANY, Montreal, Can.: line of pneumatic tools, including sand rammers, riddles, chip-

ping hammers, pneumatic drills, &c.

Herman Pneumatic Machine Company, Zelionople, Pa.:
Class B jar molding machine, taking in flask 24 x 45 in.; model of class B, bumper jar machine for heavy copes and drags, operated with 8 x 8 in. flask on cross screw

In a temporary building, outside Machinery Hall, several working exhibits were placed. The Baillot cupola and Steele-Harvey melting furnaces furnished iron and brass respectively for pouring molds, which were made in demonstration. A molder's floor was laid out and snap flask work with special equipment was demonstrated. The oven for drying cores and the tumbling barrels used in this connection were part of the exhibit of the J. D. Smith Foundry Supply Company, Cleveland, Ohio. The exhibitors were the following the following the connection were part of the exhibit of the part of the following the followin Cleveland, Ohio. The exhibitors were the following:

MONARCH ENGINEERING & MFG. COMPANY, Balltmore, Md.: No. 60 tilting oil melting furnace using crucible; No. 60 non-tilting melting furnace; No. 125 nontilting furnace; special Babbitt melting pot; a ladle heater and rivet furnace or tempering forge; No. 6 Monarch blower. The tilting furnace poured red

brass daily for souvenirs and general castings.

Dominion Iron & Steel Company, Sydney, N. S.: Dominion and disk brands of pig iron used in demonstrating the Baillot

cupola.

BAILLOT CUPOLA AND GAS REGENERATING SYSTEM, JULES DE CLERCY, Montreal, Can.: The cupola was of the smallest type made, 26 in. in diameter at the bottom and 21 in. at the charging door; capacity, 2½ tons per hour. Each afternoon a heat was taken off to pour various molding machine castings. The regenerative principle of the cupola is that the gases are taken from the region of the charging door and returned to the tuvere zone, resulting in a material raising of the temperature the blast in the center of the charge. The danger from sparks is also considerably lessened.

J. D. SMITH FOUNDRY SUPPLY COMPANY, Cleveland, Ohio: Roller door and combination core oven in operation, drying cores for molds poured in brass or iron. In 84 hours' continuous run, which included heating up, coke consumption was 440 lb. Rid-dling machinery, tumbling barrels and the Smith injector sand blast cleaning apparatus were shown in operation.

The Process Building.

In the Process Building firms not operating any portion of their display by steam or electric power made their exhibits. In this building were the headquarters of the American Foundrymen's Association and the Foundry Supply Association. The registration desk was located at the prin-Among the exhibits were the following:

"THE BIG THREE" (Whiting Foundry Equipment Company, Harvey, Ill.; S. Obermayer Company, Cincinnati, Ohio; Dominion Foundry Supply Company, Montreal, Que.): Overhead tram-way systems, air hoists, electrical and mechanical brake mechanism and geared ladies; facings, partings and general foundry supplies; photographs of foundry installations.

JONATHAN BARTLEY CRUCIBLE COMPANY, Trenton, N. J.: Dis-tributed literature in connection with their new plant. Will be ready to furnish plumbago crucibles for all classes of work early in the fall.

ROBESON PROCESS COMPANY, Au Sable Forks, N. Y.: Rest room, with exhibits of raw materials used in the manufacture of Glutrin.

FRANCIS HYDE & Co., Montreal, Que.: Foundry supplies: Blodgett's core oven; crucibles made by Bridgeport Crucible Com-pany; King portable oil furnace; King molding machine. HILL & GRIFFITHS COMPANY, Cincinnati, Ohio: Peerless perforated chaplets; patent snap molder's bench; steel coke baskets;

general foundry supplies.

Pickands, Brown & Co., Chicago, Ill., (also Solvay Process
Company, Syracuse, N. Y.): Solvay by-product coke. It was used
in the demonstration of the Baillot cupola in the temporary

NORTHERN ENGINEERING COMPANY, Detroit, Mich.: graphs of the company's cranes and other foundry equipment.

R. B. Seidel, Inc., Philadelphia Black Lead Crucible Works,

Philadelphia, Pa.: Plumbago crucibles for steel, brass and other metals; special pots for brass foundry work; stoppers and nozzles for steel ladles; brazing pots, phosphorizers and special shanes.

W. W. LINDSAY & Co., Philadelphia, Pa.: Foundry chaplets and anchor

J. S. McCormick Company, Pittsburgh, Pa.: The "McCormick Roadster," a model bicycle built up of the smaller foundry supplies attracted general attention. Mallets, brushes, sieves, rapping irons, rammers, bars and beliows were prominent in its construction. Foundry ladles, exhaust tumbling mills, molders' tools, the Farnham sand blast machine, core ovens, facings and

general supplies also shown.

GREGG MFG. COMPANY, Cleveland, Ohio: Core wire cutting machine, for straightening and cutting wire up to lengths of

NORCEOSS MOLDING MACHINE COMPANY, Terre Haute, Ind.: Photographs of machine and castings, showing character of work

DETROIT FOUNDRY SUPPLY COMPANY, Detroit, Mich.: Foundry supplies and molders' tools; sprue cutting machine; Woodison crucible oil furnace; Webb molding machine; brass founders' tilting tumbling barrel; molders' steel traveling bench; McPhall flasks, firebrick, facing, &c.

PAROID ROOFING COMPANY, Hamilton, Ont.: Felt and asphalt roofing.

ARTHUR KOPPEL COMPANY, Pittsburgh, Pa.: Industrial railroad systems, mill supplies, foundry and industrial railroads, miniature cars and equipments.

CLEVELAND WIRE SPRING COMPANY, Cleveland, Ohio: Foun-y barrels, boxes and trucks, factory shelving, steel racks for toolrooms, &c.

KNOEPPEL, Buffalo, N. Y.: Model of improved cupola,

showing tuyere system.

FALLS RIVET & MACHINE COMPANY, Cuyahoga Falls, Ohio:
Wadsworth core machines, quick speed changing core cutting off and coning machine, power and electrically driven; Wadsworth core ovens and a display of standard core prints which are to be made and supplied the trade. CANADIAN LABORATORIES, Toronto, Can.: Collection of test

FOUNDRY SPECIALTY COMPANY, Cincinnati, Ohio: Parting

compounds and flutes, flutine and partine.

Hamilton Facing Mills Company, Ltd., Hamilton, Ont.:

Canadian silice sands, facings and foundry supplies.

TORONTO TESTING LABORATORY, TOPONTO, Cam., and DETROIT
TESTING LABORATORY COMPANY, Detroit, Mich.: Chemical and metallurgical engineers.

WESTERN FOUNDRY SUPPLY COMPANY, New York: Ferroalloys; ground 80 per cent. ferromanganese.

STANLEY DAGGETT, New York: Perfection parting, iron and

steel cements.

REID FOUNDRY & MACHINE COMPANY, Ingersoll, Ont., Worcester, Mass.: Reid molding machine—a split pattern, hand ramming type, shown fitted with patterns for agricultural castings.

GOLDSCHMIDT THERMIT COMPANY, New York and Toronto: Demonstrations of the use of thermit, showing welding and burning apparatus; also crucibles, firebrick shapes, alloys, &c. FOX MACHINE COMPANY, Grand Rapids, Mich.: Universal

trimmers and core box machines, cutting irregular and straight cores

S. F. BOWSER COMPANY, INC., Fort Wayne, Ind., and Toronto,

Can.: Oil tanks and oil storage systems.

P. H. & F. M. Roots Company, Connersville, Ind.: Roots' positive pressure blower for foundry purposes; rotary pumps.

U. S. Graphite Company, Saginaw, Mich.: Foundry facings.

Carborundum Company, Niagara Falls, N. Y.: Carborundum grinding wheels, rubbing bricks, fire sand for brass furnaces, paper and cloth carborundum disks, grinding and polishing materials.

terials, crude materials, &c.

B. F. STURTEVANT COMPANY, Boston, Mass.: Sturtevant blower, used for furnishing blast to Baillot cupola.

AUTO-SAND MIXER COMPANY, Piqua, Ohio: Gasoline driven sand mixer for cutting sand on the floors; in operation.
FREDERIC B. STEVENS, Detroit, Mich., and Windsor, Ont.:

Elaborate display of foundry tools, emery wheels, facings, molders' tools. &c.

CANADIAN GAS POWER & LAUNCHES, LTD., Toronto, Ont.: Launches, gasoline engines, running blower and electric generators; propeller blades, &c.

The New England Foundrymen's Association held its last regular meeting before the summer outings at the Exchange Club, Boston, June 10. The occasion developed into one of entire informality, as it was voted to dispense with all business. A supper was served with novel features, and afterward Charles Everett Beane, Somerville, Mass., gave his story on Newfoundland, illustrated by moving pictures taken by himself.

Automobile Cylinder Manufacture.*

BY L. N. PERRAULT.†

The automobile has undoubtedly done more than anything else to develop the highest degree of skill and accuracy in the foundry. The successful making of the various types of cylinders demands the utmost painstaking, intelligent forethought and supervision. To such an extent is this feature carried out that some foundries which make a specialty of this class of work find it profitable and even necessary to employ a skilled man, whose sole duty consists of a constant oversight of each new job from the arrival of the drawings or patterns. noting the efficiency, or lack of it, with which each operation is conducted, and conferring with the superintendent and foreman on ports noted, until all are satisfied that no further improvement can be made to hasten production or better the product.

A thorough knowledge of the subject, which can be acquired only by long experience, is indispensable to the foundryman who hopes to make a success of casting water cooled cylinders with the jackets integral. His judgment is also indispensable to the designer, who many times sees only the virtues of his design as compared with others, and either does not recognize or ignores its drawbacks from the foundry point of view. Again, unless the man who makes the pattern has a liberal foundry experience, his ideas of making the pattern and core boxes so that the molds and cores can be readily assembled would be laughable. That is, if the foundryman could be induced to laugh after spending several hours filing, scraping and fitting cores, and trying them in the mold again and again in an endeavor to get an even thickness around ports, valve chambers and jacket walls, so that he may get a sample casting to cut open for inspection. This, by the way, is a wise move if the order is large, for a casting sawed into a number of sections and along the right lines exposes every imperfection. With the most skilfully made patterns and core boxes it is often necessary to make some slight alterations after the cylinder is cast, and it seems almost wonderful that the patternmaker can work as closely to the many curves and odd shapes as he does and not vary more in the thickness of the metal walls.

A Complicated Process.

Take for illustration, the twin cylinder unit in common use in the two, four and six cylinder cars both here and abroad. In some patterns the entire core, with the exception of the barrel cores, and consisting of the top and bottom jacket, two ports, one inlet and one exhaust core, are assembled and pasted in a form (which may be made of iron, plaster of paris or oil sand, and which is an exact replica of the bottom of the mold), then dried in the oven, and, when ready, set into the mold as one core. In this case one can readily see the necessity of each core having suitable provision made for locating and locking into exact place, for the variation of even 1-64 in, in one core only would cause the casting to be scrapped. In other patterns of the same outward design, the bottom jacket is first located in the mold; next the barrel cores, which in this case have port and valve seat cores made integral with them, are set. Then the second section of the jacket core is pasted in place, and the first cheek closed; next, the inlet and exhaust cores are set in place and the top jacket pasted on and dried in the mold with a gasoline torch, and the second cheek and cope closed and clamped ready to cast. Either method is reasonably safe, but the writer prefers the second, as one has the opportunity to see that the cores are properly located after each operation. On this work it is very necessary to have just the right materials for making both the mold and cores.

Consider for a moment the skill and accuracy called for on the part of the coremaker, which enable him to make a jacket core as large as a water bucket, varying in thickness from % in. in some parts to 21/2 in. in others,

^{*} A paper read at the Toronto meeting of the American Foundrymen's Association, June, 1908.

* Manager of the Waterbury Castings Company. Waterbury,

and which must successfully withstand a pressure of $\frac{1}{2}$ in. of metal outside against $\frac{1}{2}$ in. pressure from the inside. How nicely must the interlacing of wires and wax vents be carried out; 1, To support the core against this pressure and in the right location; and, 2, to furnish a free and quick egress for the rapidly generated gases.

A Great Increase in Output.

Only a few years ago the American foundryman who could successfully make automobile cylinders was looked upon as a wonder and was much talked of among the fraternity. Even then his best efforts only produced a good one now and then. His daily production per man is exceeded hourly to-day, owing to the experience that time has brought in simplifying the design and construction of both patterns and core boxes, as well as educating some of our brightest molders, who have been quick to appreciate the advantages of being specialists in this very interesting line of work. The writer has seen some of the prominent automobile builders increase their output several hundred per cent, in the past few years. Starting with only one model, and that largely an experiment, to-day their line includes several types, all of which are standard and wholly successful, and now several foundries in the United States devote the greater part of their time to this great and growing demand for automobile cylinders.

Thin Walls Demanded.

The great stress laid by the automobile engineer upon saving weight has made thin castings a necessity in cylinders with the water jackets cast integral. Little by little the thickness was reduced until the danger line was reached. Then strengthening ribs were added, and these coming in the jacket core boxes make the problem all the more difficult for the foundryman. Again, the presence of bosses for the various studs, &c., often necessitates the use of internal chills to hasten cooling and prevent shrinkage. The enormous strains put upon the cylinders in actual service, by reason of vibration, and the unequal heating of different parts by the exploded gases, make the question of strength an important one. Strong irons, by reason of their chemical composition, are inclined to be rather hard when cast into such thin sections, yet the engineer demands a strong casting, which must machine uniformly and be absolutely free from either hard or spongy spots and sound in bosses and jackets.

Analyses of Foreign Mixtures.

As the result of careful study and patient experiment, the writer has settled on a mixture which has stood the test of time and has been uniformly satisfactory, giving a tensile strength of about 36,000 lb. per square inch. Strange and complex are the opinions of some of the designers with whom we come in contact in the course of our investigations. As an illustration, A says: "I wouldn't use any but French castings; they are the only good ones made." He kindly allowed me to take borings for analysis. B says: "I have had them from France, Germany and Italy, but the only man I ever knew who could turn out a decent cylinder has a little shop in England and he makes all of mine:" I append the analysis of both, selecting these as the two extremes for your consideration:

French.	English.
Silicon 1.72	2.73
Sulphur 0.110	0.083
Phosphorus 1.10	1.141
Manganese 0.590	0.41

Molding.

When the size of the order will permit, interchangeable iron flasks should be used. These should be as light as is consistent with safety, for in three or four parted work the handling of flasks is quite an item in the molder's labor. The patterns and core boxes should be of metal, or if of wood the parts most exposed to wear should be protected by metal facing. All loose bosses, &c., should be so fitted that even the slightest displacement cannot occur, and such bosses as will permit of it should be cored to avoid shrinkage, for every part of the cylinder must be tight to stand the strains of service. The sand should be of fine texture and open

grained, very carefully mixed or ground, worked rather dry, and well blackened with a good grade of plumbago. These points if carefully observed should produce smooth round castings in green sand. The following methods of molding are used in our foundry, the selection being governed by the type of pattern, size of order, &c.:

1. In this case one molder makes and casts his work.

2. The different parts of the pattern are fastened to moldboards. Skilled molders are used on the difficult parts and cheaper men on the simpler parts, while the coring, closing, &c., are done by another gang and the molds cast by laborers.

3. The patterns are mounted on molding machines operated all day by one gang, while the core setting, casting, &c., are done by others.

The writer has in mind a certain cylinder, for several years molded by the first method at a cost per cylinder of 662-3 cents each. Later it was made on a three parted molding machine at a cost of 16 cents, while there was a saving in cost in machine shop of 25 per cent. over the old method of hand molding.

Coremaking.

Iron forms should be provided for such cores as need support while drying, others also for shaping the core wires. These can be made by a boy or laborer and stored till wanted. The sand should be strong, sharp and sufficiently fine to give a smooth surface. We prefer an oil binder for various reasons. The wax vents must be of a composition which will neither flatten out nor break under the rammer, will melt readily in the oven and be absorbed by the sand with no detriment to the core. Some wax leaves the core rotten about the vents and is liable to give way to the pressure of the iron while being cast, causing the loss of the cylinder.

The wires should be pliable, yet strong enough to hold their shape when set, and should be led to all parts of the core in a manner which will permit their ready removal after casting. They are not only necessary for support, but they assist greatly in the removal of the core, which becomes somewhat loosened by their withdrawal and flows through in their wake. After drawing off the box, all jacket cores should be carefully examined for exposed wires or vents, and these attended to before the cores are placed in the oven. After being dried, the cores should be well blackened and again dried, and if they are to be assembled and pasted by the coremaker should be accurately measured by the proper forms and gauges and set aside ready for the mold. Our practice is to have the sand and oil carefully measured, mixed and stored in bins and delivered to the benches, the cores placed in the ovens and again delivered to their makers by a gang of laborers, this confining the whole of the coremakers' time to the skilled part of the production. The ovens are fired at night only, and the heat regulated by pyrometers, insuring a perfect bake.

Each foundry should have its own wax vent machine (the writer will gladly recommend a good one on inquiry), with dies for the various sizes needed. One man by two hours' work with this machine can turn out vents enough to supply a hundred coremakers,

There are various compounds in the market, which are of good quality but more expensive than that made on the premises need be.

Casting the Cylinders.

The iron should be melted "hot" and handled as quickly as possible to avoid cold shuts in the jackets, also because a casting poured hot is more likely to finish sound than one poured dull. With good sized pouring basins and risers where needed, hot iron of the right mixture, sound cores and a well made mold, the losses on this class of work will be about the usual foundry average.

Cleaning.

We prefer to pickle our castings, first, because there is less risk of breakage than in tumbling; second, because pickling softens the skin or scale which otherwise is hard on the cutting tools, and, lastly, because dirty spots or other blemishes are more apt to be readily found than in a black polished surface. Our methed is as follows: The gates, risers and fins are first removed.

Next the wires are drawn out and the casting is lightly tapped with a hammer and rolled from side to side on a plank, bringing each cored hole in turn to the bottom so that the core sand may flow freely out. Then at last by running a wire from the cored holed to all the remote places we make sure that all the sand is out. The casting then goes to the pickling bench, is well drenched and left till the following morning, when it is washed and goes to the inspector. He carefully looks it over for outward defects and if none are apparent he measures it with the proper gauges and sets it aside to be chipped and filed. The castings are next subjected to a hydrostatic pressure of 100 lb, to ascertain if there are any leaks from the water jacket, both externally and internally. This done, if good they are ready for shipment.

Titanium in Cast Iron.*

BY DR. RICHARD MOLDENKE, WATCHUNG, N. J.

Among the numerous applications of electrical energy, none stands higher in the eyes of the iron and steel metallurgist than the electric furnace. Ferro-alloys containing metals formerly regarded as practically infusible



Fracture of Chill Piece of Titanium Iron, Also Excrescence at Top as the Metal Set.

can now be obtained for simple addition to the ladle and their effect studied, and the reduction of the cost to a commercial point has brought us nearer to the much sought goal of physical perfection in our iron products.

Probably no one has done more to study the scientific and commercial side of titanium as applied to iron and steel than Auguste J. Rossi. Due to his efforts, titanium, from having the blackest kind of a reputation in the blast furnace, has been given a place in the metallurgy of iron which is beginning to grow in importance. The benefit to be derived from a formerly despised material and the eventual opening up of immense resources of ore heretofore considered valueless will remain the best monument of his career.

Titanium Alloy from the Electric Furnace.

Of the two methods of preparing titanium for use in iron, the aluminothermic and the electric furnace, the latter seems destined to make the cheaper product; and as the selling price of a 10 per cent. titanium iron alloy is now within commercial limits, its use for the foundry is worth considering closely. For this purpose a series of tests was instituted on behalf of the American Foundrymen's Association, the results of which are given herewith. In the preliminary tests two classes of alloys were tried, one in which the material was free from carbon, and the other having some 5 per cent. of this elè-

ment present. The tests showed that while both alloys could be used for the rather small quantities of iron treated, the carbon titanium alloy was better adapted for foundry work, as the melting point is lower. However, the alloy free from carbon can be used in the foundry where large bodies of metal are to be treated, and time can be given for a thorough incorporation of the material.

How to Use the Alloy.

The apparent infusibility of the titanium iron alloys has therefore militated heavily against their use, and hence a word about this matter. When the lumps of alloy are thrown into the ladle, they must be given time enough to heat up and alloy with the bath by thorough stirring. This takes some time, and usually, especially with steel, fear that the metal may cool too much results in pouring before the titanium has done its work. Hence the writer suggests that where large lumps of either alloy are used, they be heated up to redness in any convenient way before use.

In making the tests in question, the standard 1½ in. diameter test bar cast on end in a dry sand mold was used. The bars were brushed clean and then tested transversely on supports 12 in. apart. Two classes of metal were used—broken car wheels and machinery pig iron. This gave gray iron and white iron castings. The alloy contained 10 per cent. titanium, so that 1 lb. alloy to 100 lb. iron would mean the addition of 0.1 per cent. titanium. The results of the tests were as follows:

TABLE I.

			1	ABLE 1.		
Machinery	Pi	g (gray i	ron).	No titaniu	m all	oy added.
No.	1	brole at	2,240	lb., with	0.10	in. deflection.
6.6	2	d	2,260	4.6	0.10	66
6.5	3	64	2,010	6.6	0.09	64
6.0	4	66	1,840	4.6	0.08	64
6.6	5	6.5	1.970	4.6	0.08	44
64	6	4.5	2,150	6.6	0.10	44
6.6	7	44	2,100	66	0.10	64
5.6	8	65	1,770	4.6	0.09	6.6
6.6	9	41	1,890	4.6	0.10	44
		Average.	.2,020	lb.	0.09	64

Analysis of pig iron: Silicon, 2.58; sulphur, 0.042; phosphorus, 0.54; manganese, 0.74.

TABLE II.

Machinery	P	ig (gray	iron).	0.05	titar	ium	(no	carbon) added.
No.	10	broke e	t 3.140	lb.,	with	0.09	in.	deflection.
5.6	11	41	2,750		65	0.09		64
6.6	12	66	2,880		66	0.09		4.6
2.2	13	64	3.070		64	0.09		44
		Average	3,100	1b.		0.09		4

TABLE III. Machinery Pig (gray iron). 0.05 titanium (carbon) added. No. 14 broke at 3.050 lb., with 0.09 in, deflection.

No.	14	broke	at	3.050	lb.,	with	0.09	in.	deflectio
6.6	15	4.6		3,140		4.6	0.10		64
5.6	16	46		3,150		4.6	0.10		6.6
6.6	17	45		3,230		4.6	0.10		4.4
6.6	18	66		2,850		46	0.10		64
16	19	66		2,990		66	0.09		44
		Avera	ge-	-3,070	lb.		0.10		4.6

TABLE IV.

Machinery	P	ig (gra	ly i	ron).	0.10	0 tita	nium	(no	carbon)	added.
No.	20	broke	at	2.880	lb.,	with	0.09	in.	deflection	
66	21	6.6		3,070		44	0.09		44	
6.6	22	44		3,150		64	0.09		e4	
		Avera	ge—	-3,030	lb.		0.09		44	

TABLE VI.

 Machinery Pig
 (gray iron).
 0.10 titanium (carbon) added.

 No. 23 broke at 3.080 lb., with 0.09 in. deflection.

 " 24 " 2,850 " 0.09 "

**	24	**	2,850	**	0.09	- 0.0	
6-6	25	44	2,850	6.6	0.09	44	
44	26	6.6	3,150	64	0.10	66	
4.6	27	4.6	3,050	6.6	0.10	64	
64	28	44	2,880	46	0.10	44	
		Average	2,990 lb		0.095	66	

TABLE VII.

Machinery Pig (gray iron). 0.15 titanium (carbon) added. No. 29 broke at 3.270 lb. with 0.11 in. deflection.

740.	40	DIONE	er c	0.40	10.	AA T C TT	0.11	AAA.	uei
66.	30	6.5		3,030		6.6	0.10		16
**	31	64		3,270		4.5	0.10		4.6
5.6	32	4.6		3,180		44	0.10		64
			_						

dissolved.

Average—3,190 lb. 0.10 "
A test with 0.15 titanium in the alloy free from carbon failed, as the metal had to be poured before the alloy was completely

^{*} A paper read at the Toronto meeting of the American Foundrymen's Association, June, 1908.

TABLE VIII.

Machinery Pig (gray iron). Titanium alloy free from carbon placed on the coke bed of the cupola and metal charged above, making the titanium addition 0.10 per cent.

_			ic citar								
	No.	33	broke	at	2.540	lb.,	with	0.09	in.	deflection.	
	44	34	64		3,020		64	0.10		64	
	66	35	4.4		3,000		4.6	0.10		44	
	86	36	4.6		2,740		4.6	0.11		44	
	66	37	6-6		3,260		44	0.10		6.6	
	66 '	38	44		3,300		4.6	0.10		44	
	6.6	39	4.4		2,420		64	0.10		6.6	
	44	40	6.4		2,300		44	0.09		44	
	6.5	41	6.6		2,880		44	0.09		4.4	
	66	42	4.6		2,810		64	0.09		44	
	44	43	6.6		3,250		44	0.10		44	
	6.6	44	.64		2,570		64	0.09		44.	
	6.6	45	4.6		2,980		64	0.10		44	

Average not taken, as the results show irregularity due to portions of the metal being treated and other portions not.

It will be noticed that the variation in strength is from 2,300 up to 3,300 lb., or practically the range of results obtained by adding the alloy to the ladle, but the results are not uniform.

TABLE IX.

87.0	40	basha	white iron)	1 210 111	O OF	audeu.
200.	40	ргоке	at 2.110	ib., with	0.05	in. deflection.
4.0	47	44	2,100	44	0.05	64
6.6	48	64	2,110	46	0.05	64.
4.6	49	6.6	2,000	44	0.05	44
40	50	44	1,920	4.6	0.04	44
5.6	51	44	2,060	44	0.04	64
54	52	44	2,070	64	0.05	44
66	53	66	2,010	44	0.04	44

Average...2,050 lb. 0.05 "
Analysis of car wheels: Silicon, 0.85; sulphur, 0.07; phosphorus, 0.420; manganese, 0.60.

TABLE X.

No.	54	broke	at	2,310	lb.	with	0.06 in.	no carbin) ac
6.6	55	66		2,660		44	0.06	+4
46	56	64		2,260		46	0.05	64
6.6	57	4.6		2,210		44	0.05	. 6
6.6	58	44		2,440		66	0.05	44
6.6	59	44		2,420		64	0.05	66
44	60	84		2,400		66	0.05	64
66	61	66		2,440		66	0.05	64
6.6	62	8.6		2,480		66	0.05	44
8.6	63	44		2,440		44	0.05	64
66	64	44		2.310		66.7	0.06	44

TABLE XI.

0.05

Average . . 2,400 lb.

~	-										
Scrap	Car	W	heels (white	iron).	0.05 t	titaniu	m	(carbon)	added.
	No.	65	broke	at 2	2,420	lb.	with	0.05	in.	deflectio	n.
	54	66	44	2	2,610		66	0.05		64	-
	6.6	67	64	2	2,340		44	0.05		64	
	64	68	44	2	2,720		4.6	0.06		44	
	6.6	69	44	2	2,230		64	0.06		64	
	64	70	44	2	.430		44	0.05		64	
	6.6	71	41	2	.440		66	0.05		44	
	66	72	61	2	.320		44	0.05		44	
	44	73	44	2	,300		44	0.06		44	
				-	-						

It was not possible to get good results with larger quantities of the alloy free from carbon, as the white iron chilled too quickly.

Average. . 2,420 lb. 0.05

TABLE XII.

No.	74	broke	at	2,380	lb.	with	0.05	in. deflection.
66	75	4.6		2,460		64	0.05	44
66	76	64		2,440		44	0.05	44
66	77	44		2,340		66	0.05	44
8.6	78	6.6		2,420		44	0.05	44
8.6	79	64		2,320		64	0.05	44
8.6	80	64		2,360		66	0.05	44
44	81	66		2,440		66	0.05	44
44	82	44		2,400		66	0.05	44
66	83	44		2,400		4.6	0.05	44

TABLE XIII.

				~	merane .					
Scrap									carbon)	
	No.	84	broke	at 2.6	00 lb.	with	0.06	in.	deflection	n.
	66	85	44	2,5	90	66	0.06		44.	
	64	86	66	2,5	00	44	0.06		64	
	44	87	44	2,6	20	66	0.06		64	
	66	88	64	2,3	00	64	0.05		64	
	66	89	44	2,5	80	44	0.06		64	
	44	90	44	2,2	80	64	0.06		44	
	6.6	91	44	2.5	90	86	0.07		44	
	6.6	92	64	2,4	30	64	0.06		44	
	54	93	46	2,6	00	44	0.07		44	
			Awaran	0 9 50	20 lb		0.00		64	

Summary of Results.

Original iron-Gray	(9 tests), 2,020 lb.	White (8 tests), 2,050 lb.
Plus 0.05 Tl "	(4 tests), 3,100 lb.	" (11 tests), 2,400 lb.
Plus 0.10 Ti 44	(3 tests), 3.030 lb.	
Plus 0.05 Ti.		
and C "	(6 tests), 3,070 lb.	" (9 tests), 2,420 lb.
Plus 0.10 Tl.		
	(6 tests), 2,990 lb.	" (10 tests), 2,400 lb.
Plus 0.15 Ti.	d. nann	" " " " " " " " " " " " " " " " " " "
and C "	(4 tests), 3,190 lb.	" (10 tests), 2,520 lb.
Total tests and		
aver. strength.	23 3,070 lb.	40 2,430 lb.
Increase in strengt cent.; White, 1:		r original, Gray, 52 per

From the above summary it will be seen that the greatest increase in strength was in the gray iron. This is of interest in connection with the recent tests made with vanadium in cast iron where the contrary was observed. The improvement in gray iron is more marked than was the case in tests made by Mr. Rossi and the writer in 1902. The same peculiarities, however, were observed in the behavior of the metal as will be described later.

The Minimum of Titanium Effective.

Looking over the averages above presented, it will be noted that the improvement is almost as marked whether 0.05, 0.10 or 0.15 titanium was used, which would seem to indicate that once the deoxidation has been effected, any additional titanium added is partially wasted. Hence, for ordinary foundry practice, 0.05 titanium added will be practically sufficient, larger amounts only being necessary in exceptionally bad cases or for special work.

Titanium and Chill.

A further curious fact in connection with the use of titanium in the foundry is the lessening of the chilling action. And yet whatever chill may remain shows very much harder iron. This is important in car wheel work. Test pieces made in the Keystone Car Wheel Works with iron which chilled 11/2 in. deep when treated with titanium in the ladle gave but 1 in. chill. Prisms cut from these chilled portions, the castings having been made from the same metal, when subjected to compressive strain and also tested for hardness with Brinell's test (use of diamond) gave the following results. (Tests made at the Carnegie Technical Schools): The original iron crushed at 173,000 lb. per square inch and stood 445 in the test for hardness, soft steel running about 105. The treated piece ran 298,000 lb. per square in, and showed a hardness of 557. Testing the soft metal below the chilled portion for hardness gave 332 for the original and 322 for the treated piece, or practically the same material so far as hardness was concerned.

The Remelting of Titanium Iron.

The writer wishes to call attention to another curious phenomenon in connection with these tests. In order to see what effect the remelting of a titanium pig iron would exhibit, a special batch made in the electric furnace, containing 3.14 titanium and 5.78 graphite, was run through the cupola. The product was cast into test bars the usual way, and part of one ladle into a chill cup. The metal as it came from the electric furnace originally was so tough that it could be broken only with severe exertion. Much of this strength was lost in the cupola remelt, and the composition of the bars was as follows:

Silicon	0.97	Graphite
Sulphur	0.067	Total carbon 3.94
Phosphorus	0.064	Titanium 0.72
Manganese	0.27	

An average of the 11 bars cast gave 2.290 lb., though this is of no special value, lacking comparison with anything.

The bars were dark gray, where one would expect a heavily mottled or at least only very light shade of gray to exist, considering the composition and comparatively small diameter. It was noticed, however, that the bars when cast retained their red heat at least three times as long as ordinarily, and this opportunity for graphite to form may account for the dark gray fracture.

Now, the further curious fact with this experiment was seen in the chill piece cast from the same ladle as some of the bars. The metal set in such a way that a large excrescence was forced out at the top, as shown in the illustration. Further, when the chill piece was

broken the fracture showed distinctly the cross of St. Andrew in its crystallization (but faintly reproduced in the illustration). Incidentally, the graphite of the chilled piece was 0.05 per cent., the other constituents being practically the ones given.

The Prolongation of Fluidity.

Just what may be the true explanation for this must be left for future investigation, but perhaps some light may be thrown upon the subject by the following: Experiments made by Mr. Fitzgerald at Niagara Falls in treating molten iron with 1 per cent. titanium, the bath of metal being 2300 degrees F., showed that the addition in question raised the temperature some 25 degrees for a minute; it then slowly dropped to the original again. Evidently there was a reaction involving the giving out of heat. Possibly this may account for the long continued redness of the test bars cast in dry sand molds.

Further, it is well known that a burnt heat causes badly "skulled" ladles, the slight drop in temperature of what looks like highly overheated metal being sufficient to do this. Here is a case of raising the melting point of the metal through oxidation. Possibly by the addition of titanium and the consequent removal of this oxidation or even of absorbed nitrogen, more particularly noticeable in steel work, the melting point is dropped again, and longer continued fluidity gives rise to the phenomenon above described.

Cleansing Action.

While this cleansing action of titanium is exceedingly interesting to the iron founder, the producer of copper is really far more concerned. Titanium copper alloy, when added to molten copper, deoxidizes it so rapidly that it is perfectly possible to make absolutely sound copper castings with a very small addition of titanium. The writer cannot present much along this line at present, but hopes to do more later. In the meantime the experiments with titanium and other alloys will be continued on behalf of the American Foundrymen's Association, and the result duly reported to the membership.

The Cincinnati Metal Trades Quarterly Meeting.

More than 100 members of the Cincinnati Metal Trades Association responded to the call for the quarterly meeting and dinner of the organization at Chester Park on the evening of June 12. It is chronicled in the records of the association as one of the best meetings in its history. President John W. Neil, John H. McGowan Company, presided, and there were present as speakers and special guests, in addition to Commissioner Robert Wuest and Editor Dingwall of the National Association Bulletin, President Thomas P. Eagan of the Cincinnati Chamber of Commerce, President C. A. Hinsch of the new Fifth-Third National Bank, Dean Hermann Schneider of the University of Cincinnati Department of Engineering, President Frank B. Wiborg of the National Prosperity Association of Cincinnati, and others representing important local civic bodies.

After the discussion of a typical prosperity menu Secretary John M. Manley of the Cincinnati Association made a vigorous and telling address on the importance of the now widely popular plan of co-operative industrial education. Through Mr. Manley and the Cincinnati Association, Cincinnati takes its full share of the credit due for the firm establishment of the new plan which has been manifested through the work of the Cincinnati committees and the indefatigable and progressive methods of Dean Schneider of the University of Cincinnati, Through the association's secretary it was also made manifest that Cincinnati intends to retain its leadership in this regard, working through its numerous and splendidly equipped shops devoted to the manufacture of machine tools. The Cincinnati association approved in no uncertain language the strong support given the movement and the development of the plan in other cities by the National Metal Trades Association. A strong indorsement of the recently instituted movement backed by the National Prosperity Association of Cincinnati was also given. J. C. Hobart talked interestingly of the possibilities of the new system in the way of producing increased efficiency and earning capacity of workmen shown in the increased quality and quantity of product made necessary by reason of the great skill of foreign workmen. President Neil called on Dean Schneider, who made the point that the plan had been found so good that it has spread to the public schools, and now a number of these in various parts of the country are figuring on instituting the system of co-operative education on a half-time basis. From the correspondence in relation to the plan it is evident that practically all the engineering institutions in the industrial centers of this country will eventually adopt it. In spite of the recent depression a larger number of students have entered in this co-operative course in connection with the large manufacturers of Cincinnati than last year—a year of unusual prosperity—which istaken by the workers in the movement as indicating that the manufacturers want them and are pleased with the system. Dean Schneider was given a hearty ovation at the close of his address.

In accepting the introduction of President Neil, Mr. Wiborg, Ault & Wiborg Company, took up the special topic of the evening, "The Sunshine Movement and Reemployment Day, July 1." He claims that there is nothing fundamentally wrong with the situation, taking the view that all the manufacturers need at this time is a mutually helpful and optimistic policy, which should manifest itself in the employment of as many idle workmen as could possibly be used by July 1, and a spirit of go-aheaditive-ness that would literally force the conservative capitalists and railroad corporations to come into the markets of the world for their needs which have been deferred so long.

Charles A. Hinsch followed Mr. Wiborg, and told of the financial side of the situation. He likened cycles of business to the swing of the pendulum. "We've been to one extreme," said he, "now we're swinging on the return," He called attention to the fact that Cincinnati's ample banking capital had at all times been available during the depression, and that none of the large local establishments had suffered in consequence.

President Thomas P. Egan of the Chamber of Commerce and of the J. A. Fay & Egan Company paid a glowing tribute to the Advertisers' Club of Cincinnati, which has fathered the sunshine and prosperity movements. He spoke of Cincinnati's wonderful growth as a tool manufacturing center, and gave the praise for its inception to John Steptoe, who in 1835 established a shop making lathes, shapers, planers and almost everything at that time known in the line of machine tool construction. According to Mr. Egan, no other manufacturing city in the United States can show so great a number of skilled workmen to its population. He reminded his hearers that Cincinnati took more Grand Prix trophies at the Paris Exposition than any other American city, and also noted that there were more exhibits of manufactured articles from Cincinnati at the Paris Exposition than from any other one city in the world.

An extensive project for developing the water power along the Cuyahoga River in the vicinity of Cuyahoga Falls, Ohio, has been started by the Big Cuyahoga Light, Heat & Power Company, recently incorporated. The company is empowered in its charter to build and maintain a system of dams, construct canals, generate electricity for light, heat and power, and sell electricity tomunicipal corporations. As preliminary to carrying out the project the company has brought an appropriation suit in Akron against a number of property owners to secure land along the river.

Edward Sherwood Meade of the University of Pennsylvania, in an article in the Quarterly Journal of Economics, discusses the policy of the United States Steel Corporation in standing for the maintenance of prices, which he approves. He characterizes this as "a unique industrial experiment," especially approving the course followed by the corporation in preventing a runaway market in steel products throughout the late period of extraordinary demand.

Tariff Revision Preliminaries.

WASHINGTON, D. C., June 16, 1908 .- Interesting and important work for the experts of the Ways and Means and Finance committees in connection with the projected revision of the tariff act has been laid out the past week. The statement of Chairman Payne of the Ways and Means Committee to the effect that no formal meetings of his committee would be held until after the November elections appears to have been quite generally misunderstood, if not purposely misconstrued. Certain newspapers opposed to the principle of protection in any form have declared that the chairman of the Ways and Means Committee had "thrown off the mask" and that the passage of the recess resolutions was "only a bluff." In a statement made at his home in Auburn, N. Y., to which he had just returned, Mr. Payne sharply challenged these publications and declares that the tariff will be revised in the near future. In this connection he says:

I see that some of the papers claim that this whole business is a subterfuge, and that no tariff revision is contemplated. Exactly the opposite is the truth. As surely as the ministration is Republican the preparation of a bill will be undertaken by the committee very soon after the election, with the view of a special session of Congress to enact it into law.

One of the most important reasons for a new fact that our strongest competitor, Germany, as well as France and other countries, has adopted a maximum and minimum rate. The minimum rate is a protective one. The maximum rate is often prohibitive. In order to meet our competitors on this ground it is necessary that we provide a tariff with a maximum and minimum rate so that we may have a chance for reciprocal trade and get the advantage of their minimum rates.

Classification of Imported Goods Obsolete.

Offices in the Federal Building at Auburn have been secured by Mr. Payne, and a staff of experts, including the regular clerks of the Ways and Means Committee, will immediately begin the work of preparing a revised classification of imported goods to be used as the basis of the new tariff. This is a departure the importance of which has been impressed upon every one who has had occasion to deal in detail with any of the schedules of the tariff laws enacted in the past 20 years. Since the tariff act of 1883 the framers of the revenue laws have made every possible effort to adhere to old classifications and have but grudgingly recognized industrial progress by the addition of new categories.

An important consideration has governed them in this, for it is obvious that it is desirable that statistical statements, appraisers' classifications and court decisions under the various laws should be closely comparable. For this reason the language of existing statutes has been followed whenever possible and often to good advantage. It is perfectly clear, however, that the industrial progress of the past two decades has rendered many old classifications entirely obsolete, and it is a well known fact that the failure of the Dingley act to specify a large number of articles of imported merchandise, some of which were known to the various trades long before 1897, has resulted in endless litigation and in many cases has cost the Government large amounts of revenue.

Specialization in the leading manufacturing industries abroad has resulted in a diversification of importations which has far outstripped the nomenclature of the existing tariff law and emphasizes the necessity for the elaboration of the present classification. On this account also the statistics laboriously gathered at the various ports of entry and compiled by the Bureau of Statistics of the Department of Commerce and Labor are in many cases absolutely valueless either to importers or to competing domestic manufacturers.

A comparison of the Dingley act with the new German tariff graphically illustrates this point. Under nearly every general classification the German schedules supply from three to ten "brackets," each of which describes more or less minutely an item included in the general classification. The customs returns follow these schedules closely and the periodical statistical bulletins reproduce them, so that it is possible at any time to ascertain the exact amount of the importations of any particular item for any given period. Such statistics are of great value to the business community, and both

importers and domestic manufacturers will be glad to learn that the Ways and Means Committee has become aroused to the necessity of elaborating and bringing up to date the imperfect and altogether antiquated classification of the Dingley law.

Chairman Aldrich Appoints Sub-Committees.

Senator Aldrich has taken advantage of the sittings of the recently appointed Monetary Commission, which embraces nearly all the members of the Senate Finance Committee, to appoint three sub-committees to handle the various divisions of the tariff investigation to be undertaken in November. Taking the text of the resolution passed by the Senate authorizing the Finance Committee to sit during the recess, the chairman of the committee has divided its provisions among his colleagues as fol-

Sub-committee A: To consider what further legislation is

Sub-committee A: To consider what further legislation is necessary to secure equitable treatment for the agricultural and other products of the United States in foreign countries, composed of Senators Aldrich, Allison, Hale, Daniel and Teller. Sub-committee B: To consider what legislation is necessary to secure more efficient administration of the customs laws, including the question of classification, composed of Senators Burrows, Hansbrough, Platt, Hopkins, Balley, Money and

Sub-committee C: To consider what changes in the customs rates are desirable and to secure data on the relative cost of products in this and the competing foreign countries and the various articles affected by changes, composed of Senators Hopkins, Burrows, Penrose, Money and Taliaferro.

In accordance with requests made upon them by Chairmen Aldrich and Payne, the executive departments have begun the work of gathering data to be used in the coming revision. The Department of Commerce and Labor, through the special agents of the Bureau of Manufactures, will make a study of the present foreign cost of production in the leading schedules as compared with the cost when the Dingley act was passed in 1897 and with the domestic cost at both periods. The consular service will co-operate in this work. The Treasury Department, through the experts of the Customs Division and Internal Revenue Bureau, will make suggestions regarding classification and rates based upon the experience of the past 11 years in the administration of the Dingley act. The Board of United States General Appraisers will also make a valuable contribution in the form of an elaborate report suggesting a more modern classification and a careful revision of rates from the compensatory standpoint, with a view to a more scientific relation between the duties on finished products and raw and partly manufactured materials.

Semi-official advices received here confirm the press reports that Speaker Cannon will favor the summoning of an extra session of Congress immediately after the inauguration of the new President on March 4, 1909, to enact into law the tariff bill, which it may be assumed will be practically formulated before its actual introduction in the House of Representatives. It is the best opinion here, in view of the preliminary work now outlined, that a new tariff law can be passed in about 60 days. This would admit of its taking effect July 1, 1909, with nearly two months' notice to the public.

The Oliver Iron Mining Company is preparing two immense new stripping jobs on the Mesaba-one at the Rust mine, at Hibbing, and one a new property on Great Northern lands, east of Coleraine. Rust is a portion of the great West Hibbing ore body, of which the Mahoning, Hull and Penobscot mines are parts, and the stripping of many million yards from this tract will expose one of the largest of the great mines of that district. The Great Northern tract is in Section 16-56-23, a piece of State land, which will ultimately return in royalties to the State school funds more than \$10,000,000. It contains some 40,000,000 tons of ore, of which a considerable share is low grade, but which is deep and easily mined.

The autumn meeting of the Iron and Steel Institute will be held at Middlesbrough, England, on Monday, Tuesday, Wednesday and Thursday, September 28, 29 and 30 and October 1, 1908.

Factors of Safety in Marine Engineering.

At the forty-ninth annual general meeting of the British Institution of Naval Architects, recently held in London, an important paper was read on the above subject. The author is Prof. J. O. Arnold, head of the Metallurgical Department, Sheffield University. The paper and the attending discussion are abstracted below.

Calculation of Factors of Safety.

The opening part is devoted to a discussion of the methods used by engineers, as a basis for their calculations on the strength of materials. Broadly speaking, they always employ the ultimate stress of the material. but some have insisted on the importance of taking the elastic limit. The reasons for taking the ultimate stress are (1) it is a value capable of accurate and rapid measurement in ordinary works practice, and (2) it is accepted as more or less true that the ultimate stress is really an indirect measurement of the elastic limit, in the ratio of two to one. The latter is approximately true in the majority of cases, but in a small, though nevertheless extremely important number of instances it is hopelessly inaccurate. As far as the author could ascertain, factors of safety in engineering practice are calculated as follows:

- In a rough and ready fashion by subjecting the material to a working stress, varying from one-tenth to one-fourth of the ultimate stress, according to circumstances.
- 2. In scientific engineering the working load of the material equals the ultimate stress divided by the factor of safety. The factor of safety is obtained by multiplying together several sub-factors, which may be designated a, b, c and d.

Sub-factor a is the ration of the elastic limit to the ultimate stress, which is almost universally assumed to equal $1\frac{1}{2}$ to $2\frac{1}{2}$, in nfild structural steel.

Sub-factor *b* is variable, depending on the character of the stress to which the material is subjected. Broadly speaking, it is based on Wöhler's classical work, published in 1871, on the action of alternating stresses. Taking three typical cases, we have:

- 1. A steady load, as in bridges, where it equals 1.
- Loads varying between a zero and the maximum, as in single acting connection rods, where it equals 2.
- 3. Alternating loads, in which the stress varies from tension to compression, as in a double acting connecting rod, where it equals 3.

Sub-factor c is a variable, depending upon the rapidity with which the stress is applied. For a steady load it equals 1; for a suddenly applied load 2, and for a load including impact 3.

Sub-factor d is used as a margin for unknown contingencies, and is a variable ranging from $1\frac{1}{2}$ to 3. The following table gives concrete examples of the application of these sub-factors:

Table 1.—Derivation of Factors of Safety.—Nature of Subfactors.

			U.		
	a.	R	apidity	7	Factor
	Elas-	b.	of	d.	of safety.
	ticity. W	ohler.	load.	Unknown.	$a \times b \times c \times d$.
Bollers	2	1	1	21/2 to 3	41/2 to 6
Double acting connect-					2.2
ing rod	11/2 to 2	3	2	11/2	131/2 to 18
Single acting rod	11/2 to 2	2	2	11/2	9 to 12
Shaft with propeller.	11/2 to 2	3	1	11/2	6% to 9
Steel cast wheel rim.	2	1	1	4	8
Steel castings	2	1	1	2	4
Nickel steel	11/2	1	1	11/2	21/4

Daugers of Over-Annealing.

The dangers of over-annealing are then illustrated. Tests are given of pure carbon steel, ranging from 0.1 to 0.4 per cent. carbon, in two widely differing microchemical conditions. The first of these conditions may be spoken of as "normalized." The bars as rolled were heated to a bright red or orange, and cooled in air. The annealed, or rather over-annealed, samples were maintained at a slightly higher temperature for 72 hours and were then cooled slowly for 100 hours. The results are given in tables 2 and 3.

It has been found that the true elastic limit is approximately 3920 lb. per square inch lower than the yield

point in normal structural material, and about 7840 lb.

Table 2 .- Results of Normalized Steels.

	A	Elon-	Re- duction			
No.	Carbon Per cent.	true elastic limit.	Yield point.	Ultimate stress.	Per ct.	of area. Per ct.
1	0.08	23,385	27,300	47,920	46.6	74.8
11/2	0.21	34,340	38,260	56,880	42.1	67.8
2	0.38	36,300	40,210	67,070	34.5	56.3

Table 3 .- Results on Annealed Steels.

	A	pproximat	e		Elon-	Re-
		true			600	duction
	Carbon	elastic	Yield	Ultimate		of area.
No.	Per cent.	limit.	point.	stress.	in 2 in.	Per ct.
1	0.08	11,920	19,760	41,080	52.7	76.7
11/2	0.21	12,370	20,210	47,600	42.3	65.7
2	0.38	13,560	21,400	56,050	35.0	50.6

The appended results were obtained with an experimental steel casting, both as cast and after drastic annealing as before. The steel contained 0.4 per cent. carbon, 0.26 silicon, 0.10 manganese, and sulphur and phosphorus about 0.23.

Table 4 .- Results Obtained on a Steel Casting.

	Approxi- mate true			Elon- gation.	Re- duction.
Condition of steel.	elastic limit.	Yield point.	Ultimate stress.		of area. Per ct.
As cast		39,430 16,580	57,120 54,430	$\frac{5.0}{32.5}$	5.6 37.7

The astonishingly low result of the true elastic limit of this over-annealed steel justifies the tentative hypothesis that mild steel, by over-annealing, may have, like pure copper, practically no elastic limit; that is to say, under any stress the metal may assume plastic, as distinct from, elastic deformation. The figures given in table 3 probably represent the extreme possibility of over-annealing, because of the practical absence of manganese in the series dealt with. Open hearth steel usually contains from 0.4 to 0.8 per cent. of this element, which considerably modifies the action of over-annealing in its excessive lowering of the elastic limit.

A great change is brought about in the microstructure by over-annealing. The texture is much coarser than that of normal steel. The carbide of the pearlite sharply segregates, some passing into the parallel lines characteristic of Sorby's laminated pearlite, and some into masses marking the beginning of the decomposition into cementite and ferrite. The true elastic limit of pure normal pearlite, roughly speaking, is about 61,520 lb. per square inch, while that of well laminated pearlite is only about 29,120 lb. That of pure normal ferrite is about 22,400 lb., while that of over-annealed ferrite is only about 11,200 lb. For manganiferous pearlite and ferrite these figures are considerably raised.

Failure of Factor of Safety Calculations in Actual Practice,

A typical example may be given of the failure of factor of safety calculations in actual practice. The following results are really the average of several cases, investigated from time to time. They include about 20 careful determinations each, of the ultimate stress and elastic limit of the steels involved. The steels were, for the most part, in the form of hollow shafts, ranging between 22 and 25 in. in diameter.

Table 5.—Results Obtained in Practice

20.500	O. 1000M100 OU	distriction and A conden	1001
True		Elongation.	Reduction of
elastic limit	Ultimate stress.	Per ct. in 2 in.	areaPer ct.
19,040	63,840	30.5	52.5

All the shafts involved had evidently been over-annealed, not necessarily in the sense that they had been overheated, but rather they had been kept for too long a time at a low red heat. It is quite probable that in designing these shafts the material was supposed to have an ultimate stress of 67,200 lb. per square inch, and an elastic limit of, say, 33,600 lb. per square inch; and that the factor of safety was to be, say, 7 to 1. This is equivalent to a working stress of 9600 lb. per square inch. The intention and actual achievement of our abstract designer are embodied in table 6.

Table 6 .- Factors of Safety.

Calculated on assumed	Calculated on actual	Calculated on assumed	Calculated on actual
ultimate stress.	ultimate stress.	elastic limit.	elastic limit.
7	6.65	3.5	1.9
Adequate.	Adequate.	Adequate	Quite inadequate.

The shafts, of which the results given in tables 5 and 6 are typical, all fractured in use, and the result in the last compartment of the table distinctly understates the worst case involved therein. The annealed large shafts nearly always exhibit decarburized "ghosts." In a large ingot, irrespective of the rejected part, there is always more or less a segregation of carbon, sulphur and phosphorus, to a series of centers. Under the microscope they show, in the ingot, as dark etching nodular segregated areas. On forging the nodule is drawn down into a dark etching red. This elongated segregation, which is relatively hard, is jumped by the tool during turning, leaving in faint relief a relatively white line; hence the machinists' term of "ghost."

Dynamic Testing.

The increasingly important subject of dynamic testing is then taken up, in its relation to factors of safety. The pioneer, valuable and extensive researches of Wöhler, published in 1871, on the influence of alternating stresses have deservedly largely influenced engineering design ever since. It must be remembered, however, that Wöhler was not a twentieth century steel metallurgist, and that some of his supposed disciples have made and acted upon deductions from his experiments not authorized by more thoughtful confirmers and exponents of his work. One of the most complete, accounts of his experiments, and probably the most thoughtful and judicious commentary thereon, is to be found in Professor Unwin's work on "The Testing of Materials of Construction."

Perhaps the most valuable of Wöhler's alternating stress tests were carried out by gripping a cylindrical test bar in a die, and rotating while in a horizontal position, these stress being applied by a weight near the end, remote from the die. The author has devised a modification of Wöhler's methods, which in the first place was applied to the testing of some large boiler plates that had split under the hydraulic test. It was argued that if the tests were always made just beyond the elastic limit instead of just within it, as is the usual case, the results would quickly reflect the liability to fracture under stresses, applied for a long period, within the elastic limit.

It was found, however, that the test predicted liability to fracture from causes altogether absent from Wöhler's fatigue phenomenon, and registered potential brittleness. This the Wöhler test not only failed to detect, but emphatically pronounced to be absent. In the author's test, the test piece, % in. in diameter and 5 or 6 in, long, is gripped vertically, in a die, and the stress is applied near the upper end by a slotted plunger. The deflection at the zero of stress is % in. on each side from the vertical, insuring a strain just beyond the elastic limit. The standard conditions adopted for works practice are 650 alternations of stress per minute.

As comparative bending tests accumulated, made by the method of the author and that of Wöhler, it became evident that the latter was a reflection of the elastic limit. It certainly reflected danger of fracture under excessive strains, but insidiously conceals danger from other causes which determine fracture generally attributed to fatigue. In fact, no matter how dangerously brittle the steel may be from chemical or physical causes, if such causes have co-produced a high elastic limit, the Wöhler test indicates the steel to be quite safe if stressed well short at that limit.

As a matter of practical fact, it is inevitable that the steel must suddenly rupture sooner or later under stresses theoretically quite safe. For perhaps the strongest proof of the foregoing statement the author is indebted to J. C. Stead, who determined to investigate the points at issue. Mr. Stead made and tested a series of mild steels with ascending phosphorus up to 0.5 per cent. There is no possible doubt of the dangerous character of the latter steel, and to deliver such a steel for the construction of engine parts would be the act of a metal-lurgical madman. The steels were forged from 6 in. to 2 in. square, and were practically identical in composition, with the exception of the phosphorus. The general analysis gave: Carbon, 0.30 per cent.; silicon, 0.21; man-

ganese, 0.40; sulphur, 0.58, and the prosphorus was 0.041, 0.303 and 0.59, respectively. The static tests are given in table 7.

Table 7 .- Results on Phosphorus Steels.

	Phosphorus		Ultimate	gation Per cent.	duction of area.
No.	Per cent.	Yield point.	stress.	in 2 in.	Per cent.
1	0.041	45,700	74,150	23.0	52.0
2	0.303	56,900	89,200	23.0	45.3
3	0.509	71,680	98,560	20.0	45.3

The Wöhler tests carried out by Mr. Stead gave the results shown in table 8, the stresses being plus and minus 33,600 lb. per square inch—namely, a range of 67,200 lb.

Table 8 .- Results of Wöhler Tests Carried Out by Mr. Stead.

No.	Phosphorus. Per cent.	Reversals of stress endured.	Ratio of resistance.
1	0.041	61,000	1.0
2	0.303	167,000	2.7
2	0.509	651 000	10.6

The author's tests, made in complete ignorance of the nature of the steels, gave the figures shown in table 9.

Table 9 .- The Author's Tests.

	Phosphorus.	Average	Ratio of
No.	Per cent.	alternations endured	resistance.
1	0.041	272	100
2	0.303	200	73
3	0.509	100	37

The curves of the results are plotted in Fig. 1. Speaking in round numbers, the Wöhler test indicated

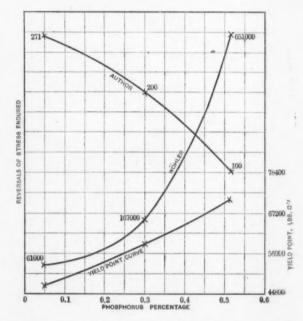


Fig. 1.—Alternating Test Curves of Stead's Phosphoric Steels-

that a mild steel containing 0.5 per cent. phosphorus was, with equal stresses, ten times as capable of resisting alternating stresses as a similar steel containing 0.04 per cent of phosphorus. The author's test, on the other hand, indicated that the steel with 0.5 per cent. had about one-third of the endurance of the steel containing only 0.04 per cent. phosphorus. From the curves in Fig. 1 it will be seen that the Wöhler is similar in type to that registered by the yield point or apparent elastic limit, the author's curve being in the opposite direction, and indicating what is well known to be a mechanical effect of phosphorus in steel.

Does High Elastic Limit Necessarily Make for Safety?

The author unhesitatingly answers the above question in the negative. It is a great mistake to suppose that because a steel of high elastic limit associated with a satisfactory statical test gives a good result under the Wöhler test it will be, therefore, faithful in practice. It has already been shown that the obviously dangerous steels in which Mr. Stead raised the elastic limit by chemical means—namely, by the addition of excessive amounts of phosphorus—quite fail to indicate under the Wöhler tests their inherent brittleness. Had they gone

into use, this brittleness must soon have brought about their fracture under alternating stress or shock. Some engineers have become so obsessed with the high elastic limit as to have altogether overdone it, and so stepped out of the frying pan into the fire, for instance with reference to holding down bolts, a pernicious practice of raising the elastic limit by mechanical strain, which has been used to some extent.

As an example, small bolts of % in, diameter may be taken, which have been hot rolled almost precise and then cold drawn to the exact size. The final product is a clean smooth bar of high elastic limit, capable of resisting an excellent Wöhler test.

This steel also makes excessively dangerous bolts, and the failure of such bolts in practice has been frequently investigated by the author. Some time ago, to test this question, the following experiments were made on acid steel ¾ in. round bolts, both as rolled and in the rolled and drawn condition. The chemical composition of the four steels was practically constant except in carbon. The silicon averaged 0.12 per cent.; manganese, 0.85; phosphorus, 0.44, and the sulphur, 0.041. The carbons were 0.26, 0.31, 0.41 and 0.49 per cent., respectively. The tests are set forth in table 10.

Pable 10 .- Results on Bolts.

	Carbon.	Yield	Ultimate	Elongation Per cent.	Red'tion of area.
Mark.	Per cent.	point.	stress.	in 2 in.	Per cent.
		Hot Rol	led Bet.		
A	0.26	54,000	79,100	34.5	61.6
B	0.31	57,600	84,250	31.8	59.6
C	0.41	64,800	95,700	26.5	48.0
D	0.49	67,000	105,100	25.5	50.8
		Rolled and	Drawn Set.		
A	0.26	82,200	87,200	19.0	50.8
B	0.31	78,650	94,000	17.5	47.2
C	0.41	87,150	104,400	16.0	40.4
D	0.49	85,150	117,400	15.0	42.0

It may be observed how the yield point has been raised by the cold drawing. Under the author's standard alternating test the results given in table 11 were obtained.

Table 11

C	arbon.	1	Alternation	ns
Mark. Pe	r cent.	Yield point.	endured.	Condition of steel.
A	0.26	54,000	346	Hot rolled.
A	0.26	82,200	248	Rolled and drawn.
B	0.31	57,600	344	Hot rolled.
B	0.31	78,650	222	Rolled and drawn.
C	0.41	64,800	336	Hot rolled.
C	0.41	87,150	206	Rolled and drawn.
D	0.49	67,000	320	Hot rolled.
D	0.49	85,150	156	Rolled and drown.

The average endurance of the hot rolled material was 337 alternations of stress, and that of the rolled and drawn steels 208—a difference of 129 reversals. The drawn steels were 43 per cent, below the minimum specified endurance for this class of steel.

The exact effect of manganese-sulphide on the mechanical properties of steel is still imperfectly understood. It exists in the form of millions of little pointed rods parallel with the direction of rolling. In many cases these rods, which are equivalent to fissures filled with a fused and brittle material, are stressed at right angles to their length. Under the static test the material gives better results when pulled longitudinally, but a series of dynamic tests on mild steel shafts show that there is a startling difference in the results on pieces cut transversely and longitudinally with the sulphide rods. A series of transverse tests endured 283 alternations; longitudinal only 193. A second series gave 293 and 118, respectively, and a third 303 and 117.

Possible Remedial Measures.

It is very hard to formulate remedial measures to improve the quality, especially of large masses, but a few suggestive remarks may be offered. The necessity of rejecting a sufficient weight of the upper part of a large ingot is too well known to need any remarks. Even in the other parts, however, it is impossible to prevent some segregation, and, in the author's opinion, in all heavily stressed engine parts the maximum phosphorus and sulphur should never exceed 0.05 per cent. Even with low sulphur and phosphorus, it is desirable to reduce segregation to a minimum, and the only practical

and reliable way of doing this is by the use of fluid compression. In the heat treatment of forgings anything like a protracted cooling, especially at a low red heat, is dangerous.

The forging, after the mechanical operation is over, may be simply allowed to cool in air, as far as possible out of drafts. It may be reheated to a good orange or dark yellow heat, quenched in oil and reheated to a temperature between 300 and 400 degrees C. (570 to 750 F.). A third method, which in the author's opinion is likely to give the best results is to reheat the forging to about 900 degrees C., a dark yellow heat, and cool in air as quickly as the circumstances of the case will permit. In regard to the mechanical testing of forgings, the author considers that a static test must always be the main method of testing between engineer and metallurgist, but most strongly advocates the abandonment of ultimate stress as a basis for the calculation of factors of safety.

As a base for such calculations, the yield point or an apparent elastic limit offers the most promising features, since it is generally connected with a decisive drop in the beam of the testing machine. It is, therefore, almost as easily, though not quite as accurately, determinable at the ultimate stress. The latter, of course, should always be noted in order to obtain a reasonable ratio between the yield point and the ultimate stress, say from 45 to 55 per cent.

The Discussion.

Prof. J. Ewing, who opened the discussion, was in entire agreement with the author as to the unsatisfactory nature of the usual specifications in force to-day, which treat the ultimate stress as the main criterion. This ought to be stopped, as the elastic limit is far more important. It must also be recognized that an important point is the plastic deformation beyond the elastic limit. He suggests the elastic limit and the total elongation of the test piece, as the two indications of quality. According to modern ideas, the elastic limit is due to a sudden slip along planes in each individual crystal. It is the point at which the slip first occurs in any one crystal. The phenomenon known as "fatigue" is influenced by whether or not the elastic limit has been exceeded in any of the chystals.

He considers the practice of giving a piece of material over-strain in order to raise the elastic limit most pernicious. It deprives the material of reserve power, and, though it may raise the elastic limit, renders it less fit to withstand any stress beyond this, except under very restricted conditions.

R. A. Hadfield, who followed, also agreed that the ultimate stress is a very poor criterion, and gave an instance from his experience of the danger of over-annealing. He was inclined to agree with the author that the high limit of manganese in mild steel gave the best results, but pointed out that such steel would require different heat treatment from ordinary mild steel. Mr. Stromeyer spoke against the tendency to use high phosphorus material for bolts because it threads more readily in the machines.

G. B. W.

The French Treaty Commission.—James B. Reynolds, Assistant Secretary of the Treasury and chairman of the commission chosen to confer with a similar body appointed by France to draw up a new reciprocity treaty between the two countries, announces that the American members will sail from New York June 27. On reaching Paris they will begin immediately their series of conferences with the French Commission. Mr. Reynolds recently requested that all persons having commercial intercourse between this country and France favor the commission with suggestions in the interest of trade expansion. Many helpful replies have been received, and it is expected that by the time the commission sails much data of a useful character in framing a new treaty will be at hand.

Henry Grey & Son, consulting engineers and inventors of the Grey beam and column mills, have removed their offices from 68 William street, New York City, to the Union Bullding, Clinton street, Newark, N. J.

Armstrong Short Ratchet Drills.

The desirability of a short head ratchet drill for working in contracted spaces is readily appreciated by machinists, boiler makers and other metal workers; but to produce such a tool without sacrificing important features, such as length of feed, strength and simplicity, is something of a problem. This the Armstrong Brothers Tool Company, Chicago, Ill., claims to have solved in the short ratchet drills shown in the illustrations herewith. The compactness of these tools enables the operator to drill holes in places wholly inaccessible with the ordinary long body ratchet drill. This is accomplished, too, without shortening the feed, by telescoping the feed screw over the drill socket, a feature of construction that is clearly shown in the sectional views of the tools.

The spindle and drill socket are made in one piece, the former being deeply recessed to receive the hollow feed screw. The drill can be instantly reversed. It is built for heavy service, the handle and head being made of one piece of drop forged steel, while the pawl and center are of tempered tool steel; all other parts are turned from bar steel and hardened.

The drills are furnished with three styles of spindles. Style R, shown in Fig. 1, takes drills with No. 3 Morse

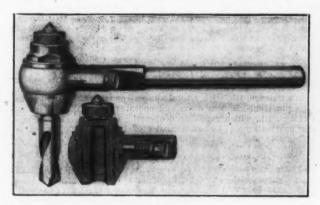


Fig. 1.-Style R.

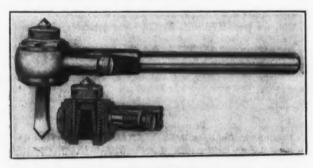


Fig. 2.—Style A.

Short Ratchet Drills Made by the Armstrong Brothers Tool Company, Chicago.

taper shank, but steel sleeves and sockets fitting style 12 spindle and taking Morse taper shank drills or taper square drills will be furnished by the makers. Flg. 2 shows the ratchet equipped with a spindle to take taper square shank drills, of which there are two styles, A and E, the former taking drills with No. 1 taper square and the latter No. 2 taper square shank. All spindles are interchangeable. The tool, Fig. 1, has a handle 12 in. long, a head 3¾ in. long and a feed of 2¾ in.; that in Fig. 2 has a handle 12 in. long, a head 2¾ in. long and a feed of 1½ in.

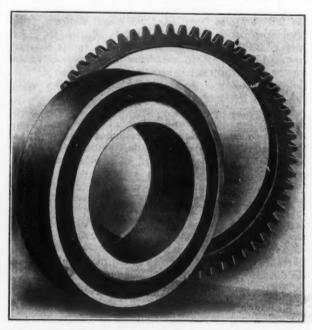
The new Metal Trades Superintendents' and Foremen's Club of Cleveland, has completed its organization by the election of the following officers: President, J. H. Francis, Kilby Mfg. Company; vice-president, D. L. Larimer, Cleveland Punch & Shear Works Company; treasurer, C. P. Dole, C. O. Bartlett & Snow Company; secretary, Philip Frankel; sergeant-at-arms, C. G. Fleming. Ferro Machine & Foundry Company; Executive Board: L. W. Bosley, Cleveland Hardware Company; J. H.

White, Baker Motor Vehicle Company; S. W. Sebelin, Cleveland Twist Drill Company, and John N. Mortimer. Central Brass Mfg. Company.

The Nuttall Removable Rolled Rim Gear.

The illustration shows a new gear with removable rolled rim for high speed and heavy baulage trolley service now being placed upon the market by the R. D. Nuttall Company, Pittsburgh, Pa. The gear has been put to severe tests in actual service and is declared to have shown exceptionally satisfactory performance.

The rim is made of a special grade of rolled steel of



The New Removable Rolled Rim Gear Made by the R. D. Nuttail Company, Pittsburgh, Pa.

high tensile strength and is shrunk on a cast steel center, making the two members practically a single piece. When worn, however, the rim can be easily removed and replaced at nominal cost, so as to make a practically new gear.

The rim can be attached to any style of center or spider. It is not limited to trolley service, but can be applied to any service where the diameter does not exceed 10 ft.

The Traffic Club of Pittsburgh has elected the following officers: President, S. L. Seymour, division freight agent of the Pennsylvania Railroad: vice-president, L. H. Constans, traffic manager of the Pittsburgh Steel Company; second vice-presidents, J. B. Nessle, assistant general freight agent of the Pittsburgh & Lake Erie, and B. A. Worthington, general manager of the Wheeling & Lake Erie; secretary, T. J. Walters, commercial agent of the Baltimore & Ohio; treasurer, W. V. Taffner, commercial agent of the Burlington; Board of Governors, transportation, G. W. Johnston, general freight agent of the Pittsburgh & Cincinnati Packet Line; William Hodgdon. freight traffic manager of the Pennsylvania Lines; Robert Hunter, commercial agent of the Merchants & Miners Transportation Company; industrial, H. E. Graham, general freight agent of the Pressed Steel Car Company; E. C. Sattley, traffic manager of the Page Woven Wire Fence Company.

The Occidental Metal & Mfg. Company, with head-quarters at Kansas City, Mo., has leased a tract of 213 acres of land at Eureka, St. Louis County, and is taking the preliminary steps necessary to establish a large manufacturing plant. Surveyors are platting the ground and representatives are negotiating with the Frisco and Missouri Pacific railroads for switches. The plant is to occupy about 8 acres. The company will manufacture brass articles principally.

The International Harvester Company.

The International Harvester Company has made application to have placed upon the regular list of the New York Stock Exchange the following securities now issned:

(a) Stock trust certificates issued under a voting trust agree ment representing 600,000 shares of the par value of \$100 each, of 7 per cent. cumulative preferred stock.

(b) Stock trust certificates issued under such voting trust agreement representing 600,000 shares of the par value of \$100 each of common stock.

The application is a comprehensive statement from which the following is taken:

All the stock of the company except 18 shares held by the directors has been deposited under a voting trust agreement, dated August 13, 1902, to be held until August 1, 1912, unless a majority of the voting trustees elect, as they may, to terminate the agreement after August 1, 1907, upon not less than 90 days' notice. The voting trustees are George W. Perkins, Charles Deering and Cyrus H. McCormick.

The International Harvester Company was organized under the general corporation laws of the State of New Jersey August 12, 1902. The duration of the corporation is perpetual. At organization the capital stock of the company consisted entirely of common stock to the amount of \$120,000,000, but by amendment of the charter on January 8, 1907, the plan of capitalization was changed (without increasing the total amount) by making one-half of the stock 7 per cent. cumulative preferred stock and leaving the other half common stock. Stockholders received one share of preferred stock and one share of common stock in exchange for every two shares of the original stock. The entire capital stock of the company has been issued.

Harvesting Machinery, Wagon and Twine Plants.

Shortly after organization the company purchased and now owns, or has sold affiliated or subsidiary companies, the plants and business formerly owned by the following concerns engaged in the manufacture and sale of harvesting machinery and twine: Warder, Bushnell & Glessner Company, McCormick Harvesting Machine Company, Deering Harvester Company, Milwaukee Harvester Company, Piano Mfg. Company.

Of the company's capital stock of \$120,000,000, \$60,-000,000 was issued for an equal amount of cash working capital, and \$60,000,000 for the manufacturing plants and other physical properties formerly owned by the five companies above named. The plants and properties were valued by the independent appraisers, exclusive of any allowance for good-will or patents, at a sum in excess of \$6,000,000. The company has no bonded or other funded indebtedness, and its properties are free and unincumbered.

The company has since purchased the plants and business of the Aultman & Miller Buckeye Company, Akron, Ohio; J. S. Kemp Mfg. Company, Newark Valley, N. Y., and Waterloo, Ia. (Waterloo plant leased); Keystone Company, Sterling, Ill.; Macleod & Co., Philippine Islands; Minnie Harvester Company, St. Paul, Minn.; D. M. Osborne & Co., Auburn, N. Y., including the twine business of Columbian Cordage Company; Weber Wagon Company, Chicago, Ill.

The following is a statement of the location and character of the manufacturing plants now owned and operated by the company (exclusive of plants owned and operated by affiliated and subsidiary companies which are described leter):

Harvesting Machinery and Farm Implement Plants.

Akron Works (Akron, Ohio), manufacturing auto-buggies and tractors.

Champion Works (Springfield, Ohio), manufacturing harvesting machinery and tillage implements.

Deering Works (Chicago, Ill.), manufacturing harvesting ma-Keystone Works (Sterling, Ill.), manufacturing harvesting

machinery and tillage implements.

McCormick Works (Chicago, Ill.), manufacturing harvesting

Milwaukee Works (Milwaukee, Wis.), manufacturing gasoline

engines and cream separators.

Newark Valley Works (Newark Valley, N. Y.), manufacturing manure spreaders.

Osborne Works (Auburn, N. Y.), manufacturing harvesting

machinery and tiliage implements.

Plano Works (West Pullman, Ill.), manufacturing wagons

and manure spreaders.

Waterloo Works (Waterloo, Iowa, leased), manufacturing manure spreaders.

Weber Works (Chicago, Ill.), manufacturing wagons.

Twine Mills.

Akron Twine Mill (Akron, Ohio), manufacturing Sisal binder twine.

Deering Twine Mill (Chicago, Ill.), manufacturing Sisal and

Manila binder twine.

McCormick Twine Mill (Chicago, Ill.), manufacturing Sisal

and Manila binder twine,
Osborne Twine Mill (Auburn, N. Y.), manufacturing Sisal and

Manila binder twine.

Subsidiary Companies Owned.

The company owns or controls the entire capital stock of the following companies:

International Harvester Company of Canada, Ltd.: The capital stock authorized and issued is \$1,000,000. The company owns and operates a plant at Hamilton, Canada, constructed in 1903, for the manufacture of harvesting machinery and tillage implements. No dividends have been paid on the capital stock

implements. No dividends have been paid on the capital stock of this company.

International Flax Twine Company: Its capital stock authorized and issued is \$250,000. The company owns and operates a flax twine mill at St. Paul, Minn. No dividends have been paid. Wisconsin Steel Company: The capital stock authorized and issued is \$1,000,000. The company operates under leases about 480 acres of iron ore land in Wisconsin, Minnesota and Michigan, including the Agnew and Hawkins mines in the Mesaba Range, the La Rue mine in the Baraboo Range, and the Victoria and Lot Three mine in the Menominee Range. These leases run from 30 to 50 years, and it is estimated that the mines contain at least 25,000,000 gross tons of ore. This company also owns about 22,500 acres of undeveloped coal lands in Harlan County, Kentucky. It also owns and operates three blast furnaces at Kentucky. It also owns and operates three blast furnaces at South Chicago, Ill., with a total annual capacity of 360,000 gross tons pig iron. It also owns and operates steel mills at South Chicago, Ill., which commenced operations in 1903. The Besse-Chicago, Ill., which commenced operations in 1903. The Bessemer converting mill has an annual capacity of 300,000 gross tons of ingots. The blooming mill has an annual capacity of 250,000 gross tons of billets and blooms. The bar mills have an annual capacity of approximately 200,000 gross tons of finished bars and shapes. It also leases and operates the Deering Rolling Mill at Chicago, with an annual capacity of 24,000 gross tons of finished bars and shapes. No dividends have been paid.

Wisconsin Lumber Company: Its capital stock authorized and issued is \$250,000. The company owns 58,000 acres of timber land in Pemiscot and Dunklin counties, Missouri, and 22,000 acres in Mississippi. It owns and operates a sawmill at Pascola, Mo. No dividends have been paid.

Eastern Building Company, Ltd.: The capital stock authorized is \$80,000, of which \$50,600 has been issued. This company owns various dwelling houses and lots in Hamilton, Canpany owns various dwelling houses and lots in Hamilton, Can-

pany owns various dwelling houses and lots in Hamilton, Can-ada, against which there is an outstanding mortgage of \$84,600.

No dividends have been paid.

Calumet & Southeastern Railroad Company: The capital stock authorized and issued is \$100,000. The company operates at the Wisconsin Steel Company's mills at South Chicago and connects them with adjacent railroad lines. Mileage—9.29 miles leased from Wisconsin Steel Company. Equipment owned—6

engines, 31 gondolas and flat cars. No dividends have been paid.

Deering Southwestern Railway: The capital stock authorized and issued is \$212,500. The company operates in and about the Wisconsin Lumber Company's timber lands in Missouri and connects them with adjacent railroad lines. Mileage owned—8.12 miles. Equipment owned—1 engine, 1 log loader, 58 log cars. miles. Equipment owned—1 No dividends have been paid.

Illinois Northern Railway: The capital stock authorized and issued is \$500,000. The company operates in and around the McCormick Works at Chicago and connects them with adjacent railroad lines. Mileage—12.5 miles leased from International Harvester Company; 6 miles leased from A., T. & S. F. R. R. Company. Equipment owned—6 engines, 28 gondolas and box

cars. No dividends have been paid:
Owasco River Railway: The capital stock authorized and issued is \$30,000. The company operates at the Osborne Works at Auburn, N. Y., and connects them with adjacent railroad lines. Mileage-0.34 mile owned, 5.31 miles leased from International

Harvester Company. Equipment—4 engines, 29 flat cars. No dividends have been paid.

Chicago, West Pullman & Southern Railway Company: The capital stock authorized and issued is \$50,000. The company operates at the Plano Works at Chicago and connects them with

operates at the Plano Works at Chicago and connects them with adjacent railroad lines. Mileage—1.81 miles owned; 2.45 miles leased from International Harvester Company. Equipment—1 engine. Dividend of \$5000 paid in January, 1907.

Lagonda Western Railway Company: The capital stock authorized and issued is \$25,000. The company operates at the Champion Works at Springfield, Ohlo, and connects them with adjacent railroad lines. Mileage—1.92 miles leased from International Harvester Company. Equipment—1 engine. No dividend have been paid. dends have been paid.

The products of the International Harvester Company, the International Harvester Company of Canada, Ltd., and the International Flax Twine Company are-

principally sold to the International Harvester Company of America, which owns or leases agency warehouses throughout the United States and in foreign countries and maintains an organization for the sale and distribution of these and allied products.

The International Harvester Company of America controls certain foreign incorporated trading companies which handle a portion of the foreign trade. This company was organized as Parker-Dennett Harvesting Machine Company, Ltd., under the laws of the State of Wisconsin, December 15, 1881. The name of the company was changed to International Harvester Company of America, September 5, 1902. Its capital stock authorized and issued is \$1,000,000 and, except nine shares, is held by trustees for the benefit of the stockholders of International Harvester Company as a class. The duration of the corporation is perpetual. No dividends have been paid on the capital stock of this company.

COMBINED INCOME ACCOUNT FOR 1907. Total net earnings, after deducting expenditures for ordinary repairs and maintenance (\$1,973,677.99), and current experimental and patent expenses (\$755,919.27)	
Reserves for contingent losses and collection expenses on receivables. 700,000.00	2,007,821.08
Deduct interest paid on purchase money obliga- tions and current loans	\$9,220,496.79 1,140,039.28
Net profits Deduct preferred stock dividends for the season 1907, 7 per cent	\$8,080,457.51 4,200,000.00
Undivided profits for 1907 carried to surplus. Surplus at December 31, 1907. Net profits. Dividends pair Season 1903\$5,641,180.61 \$3,600,000.00 Season 1904\$5,658,534.68 4,800,000.00 Season 19057,479,187.36 4,800,000.00 Season 19067,846,947.32 4,800,000.00 Total. Deduct special appropriation from surplus at December 31, 1906, as a reserve to meet future col-	Undivided 1. profits. \$2,041,180.61 \$58,534.68 2,679,187.36 3,046,947.32 \$8,625,849.97
lection expenses on outstanding receivables Undivided profits at December 31, 1906	\$8,125,849.97
Add balance of undivided profits for season 1907	3,880,457.51

Total undivided profits at December 31, 1907..\$12,006,307.48 The above surplus is composed solely of the balance of net earnings of the business during the five years of operations, after deducting dividend payments, the Board of Directors having decided to charge off the surplus of \$7,076,225.65 existing at organization, October 1, 1902, by reason of the excess of the appraised value of the physical properties (including inventories) then acquired (\$67,076.229.65) over the par value of the capital stock issued therefor (\$60,000,000).

The General Balance Sheet.

The following is the general balance sheet of the company (including the assets and liabilities of affiliated and subsidiary companies) as of December 31, 1907 (the

close of its last fiscal year):	
Property account:	
Appraised valuation of real estate and plant property acquired at	
organization, plus additions, im- provements and new acquisitions	
to date\$62,293,844.12 Expenditures for stripping and de-	
velopment at ore mines 550,292.36	844.136.48
Deferred charges to operations:	011,130.10
Advanced payments for mine royalties, &c Current assets:	285,287.66
Inventories—Finished products, raw material. &c., at close of 1907 sea-	
son\$35,140,415.69	
Subsequent material purchases and manufacture for 1908 season 15,147,210.08	
\$50,287,625.77	
Receivables:	
Farmers' and agents'	
notes\$26,583,001.10	

\$41,094,388.37

Accounts receivable. 14,511,387.27

Total		194,
20		
Total	reserves for contin-	
Total. \$156,282,454.	gent losses 1,802,878.06	201 510 31
Capital stock: Preferred	Cash 3	93,153,030.0
Capital stock: Preferred	Total	\$156,282,454.1
Preferred		
Purchase money obligations 3,450,194.6 Purchase money obligations 3,450,194.6 Purchase money obligations 10,465,775.5 Accounts payable: 10,465,775.5 Audited vouchers, accrued interest and taxes, &c. \$4,543,442.94 Preferred stock dividend (payable March 2, 1908) 1,050,000.00 Reserves: Plant depreciation and extinguishment \$3,841,502.11 Collection expenses on receivables 600,000.00 Insurance 325,231.64 At 766,733.7 Total \$156,282,454. Note.—Capital stock was issued at par as follows: \$60,000 Of or cash for working capital; \$60,000,000 for real establants and physical inventories which were valued by indepenent appraisers in excess of that amount. No capital stock was used for goodwill, patents, promotion fees or organisation elemes. The surplus of the company consists entirely of the balant of net earnings since organization, after deducting dividend panents. The purchase money obligations issued in part payment few properties acquired which were still outstanding at Deceber 31, 1907, amounted to \$3,450,194.63. Of this sum the natures and is being paid in the current fiscal year ending I ember 31, 1908, \$3,173,398.21. The balance of \$276,796. natures in 1909 and 1910. † The bills payable at December 31, 1907, consist of: loans maturing from 1910 to 1913. \$7,000,000.5 Coans maturing in January and February, 1908 (paid at maturity) \$778,560.5 Total \$1,0465,775. The accounts payable at December 31, 1907, consist of: 1911 Total \$10,465,775. \$1,0465,775.	Capital stock:	
Purchase money obligations	Preferred\$60,	000,000,000
Accounts payable: Audited vouchers, accrued Interest and taxes, &c		\$120,000,000.0
Accounts payable: Audited vouchers, accrued Interest and taxes, &c	Purchase money obligations	3,450,194.6
Audited vouchers, accrued Interest and taxes, &c		10,465,775.3
Preferred stock dividend (payable March 2, 1908)		
Reserves: Plant depreciation and extinguishment	audited vouchers, accrued inter-	543 442.94
March 2, 1908)		
Reserves: Plant depreciation and extinguishment	March 2, 1908) 1,	050,000.00
Plant depreciation and extinguishment		5,593,442.9
guishment \$3,841,502.11 Collection expenses on receivables 600,000.00 Insurance 325,231.64 Jurplus—Undivided profits at December 31, 1907 12,006,307. Total. \$156,282,454. Note.—Capital stock was issued at par as follows: \$60,000,000 for cash for working capital; \$60,000,000 for real estatolants and physical inventories which were valued by independent appraisers in excess of that amount. No capital stock was used for goodwill, patents, promotion fees or organization elements. The surplus of the company consists entirely of the balant of net earnings since organization, after deducting dividend patents. The purchase money obligations issued in part payment flew properties acquired which were still outstanding at December 31, 1907, amounted to \$3,450,194.63. Of this sum the natures and is being paid in the current fiscal year ending Dember 31, 1908, \$3,173,398.21. The balance of \$276,796. The bills payable at December 31, 1907, consist of: Loans maturing from 1910 to 1913 \$7,000,000. Coans maturing from 1910 to 1913 \$7,000,000. Coans maturing in January and February, 1908 (paid at maturity) 2,272,615. Total \$10,465,775. \$ The accounts payable at December 31, 1907, consist of: Audited vouchers (principally paid in January, 1908) \$3,243,972. Total \$10,465,775. \$ The accounts payable at December 31, 1907, consist of: Audited vouchers (principally paid in January, 1908) \$3,243,972. Total \$10,465,775. \$ The accounts payable at December 31, 1907, consist of: Audited vouchers (principally paid in January, 1908) \$3,243,972. Total \$10,465,775. \$ The accounts payable at December 31, 1907, consist of: Audited vouchers (principally paid in January, 1908) \$3,243,972. Total \$10,465,775. \$ The preferred stock dividend, fourth quarter, paid March 2, 1908 1908 1,050,000.		
Collection expenses on receivables 600,000.00 Insurance 325,231.64 Surplus—Undivided profits at December 31, 1907 Total. \$156,282,454. Note.—Capital stock was issued at par as follows: \$60,000 00 for cash for working capital; \$60,000,000 for real estatement appraisers in excess of that amount. No capital stock was used for goodwill, patents, promotion fees or organization element. The surplus of the company consists entirely of the balant of net earnings since organization, after deducting dividend patents. The purchase money obligations issued in part payment flew properties acquired which were still outstanding at December 31, 1907, amounted to \$3,450,194.63. Of this sum the natures and is being paid in the current fiscal year ending Dember 31, 1908, \$3,173,398.21. The balance of \$276,796. natures in 1909 and 1910. † The bills payable at December 31, 1907, consist of: coans maturing from 1910 to 1913 \$7,000,000. Loans maturing in January and February, 1908 (paid at maturity) \$2,272,615. \$700,000 \$7,0	guishment \$3.	841,502.11
Total	Collection expenses on receivables	600,000.00
Total	Insurance	325,231.64 4.766,733.7
Note.—Capital stock was issued at par as follows: \$60,000 for cash for working capital; \$60,000,000 for real estatement appraisers in excess of that amount. No capital stock we sued for goodwill, patents, promotion fees or organization excesses. The surplus of the company consists entirely of the balant of net earnings since organization, after deducting dividend patents. The purchase money obligations issued in part payment fees grouperties acquired which were still outstanding at Deceiver 31, 1907, amounted to \$3,450,194.63. Of this sum the natures and is being paid in the current fiscal year ending December 31, 1908, \$3,173,398.21. The balance of \$276,796. matures in 1909 and 1910. † The bills payable at December 31, 1907, consist of: coans maturing from 1910 to 1913. \$7,000,000. Loans maturing in January and February, 1908 (paid at maturity) \$2,272,615.55 (Siber drafts discounted at Manila, P. I. (paid at maturity) \$2,272,615.55 (Siber drafts discounted at Manila, P. I. (paid at maturity) \$100. Total \$10,465,775. † The accounts payable at December 31, 1907, consist of: Addited wouchers (principally paid in January, 1908) \$3,243,972.	Surplus-Undivided profits at December	
Norz.—Capital stock was issued at par as follows: \$60,000 100 for cash for working capital; \$60,000,000 for real estate of the cash of the company consists which were valued by independent appraisers in excess of that amount. No capital stock we saved for goodwill, patents, promotion fees or organization elenses. The surplus of the company consists entirely of the balant of net earnings since organization, after deducting dividend patents. The purchase money obligations issued in part payment for the properties acquired which were still outstanding at December 31, 1907, amounted to \$3,450,194.63. Of this sum the natures and is being paid in the current fiscal year ending December 31, 1908, \$3,173,398.21. The balance of \$276,796. The bills payable at December 31, 1907, consist of: Loans maturing from 1910 to 1913		-
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§ The reserves for plant depreciation and extinguishment include Ore extinguishment.
Timber depletion.....

Total.....\$3,841,502.11 Since the formation of the company, liberal expenditures have been made annually for repairs and renewals to the physical properties to maintain them at their maximum of efficiency. All such expenditures have been

charged, when incurred, to operating expenses, and have been absorbed in the cost of production. A comparison of these expenses for the last three seasons is:

Season 1905. Season 1906. Season 1907. Harvester works and

twine mills......\$1,004,069.26 \$1,190,939.73 \$1,599,116.13 Furna :es and steel mills 194,227.50 240,840.70 231,873.99 Miscellaneous properties 99,067.41 102,829.82 142,687.87 Totals......\$1,297,364.17 \$1,534,610.26 \$1,973,677.99

There were also charged off during 1907 expenditures

for special renewals amounting to \$307,821.08 for minor improvements and equipment, and for special alterations and renovation of plant properties incidental to the manufacture of the new lines of wagons, manure spreaders, gasoline engines, cream separators, auto-buggies and tractors.

The fiscal year of the company ends on December 31 of each year. The annual meeting of the stockholders of the company is held on the third Thursday of April at Hoboken, N. J., and the regular meetings of the Board of Directors are held bi-weekly. The principal office of the company is at 237 Michigan avenue, Chicago, Ill.

The directors are as follows: Charles Deering, chairman; George F. Baker, William J. Calhoun, Cyrus H. McCormick, Norman B. Ream, Charles Steele, Cyrus Bentley, Paul D. Cravath, Elbert H. Gary, Richard F. Howe, Stanley McCormick, John P. Wilson, James Deering, John J. Glessner, William H. Jones, Harold F. McCormick, George W. Perkins, Leslie D. Ward. The members of the Finance Committee are George W. Perkins, chairman; George F. Baker, Charles Deering, Elbert H. Gary, Cyrus H. McCormick, Norman B. Ream. The officers of the company are as follows: President, Cyrus H. McCormick; vice-presidents, James Deering, John J. Glessner, William H. Jones, Harold F. McCormick; secretary, Richard F. Howe; treasurer, Harold F. McCormick; general counsel, Edgar A. Bancroft,

The Van Dorn Iron Works Outrage.

On the night of June 2 damage to the extent of \$10,000 was inflicted by unknown parties on the plant of the Van Dorn Iron Works Company, Cleveland, Ohlo, through the wrecking of a derrick and other machinery by dynamite. More dynamite was found near the engine room, but it failed to explode. A meeting of the employees was held on the following Friday, at which a patrol was voluntarily organized for the purpose of guarding the works at night to prevent any further outrage. The company has issued the following explanatory statement:

"The Van Dorn Iron Works Company's plant, located at the junction of the Pennsylvania and the New York, Chicago & St. Louis railroads, consists of eight acres, about one-half of which is covered with the most modern steel frame fireproof buildings and their manufactories, consisting of four departments, each under a separate chief. The departments consist of one manufacturing jail prison and burglar proof vault work; the art metal work department manufacturing office files and appliances; the general iron department manufacturing iron fences, ornamental house and stable work, lawn seats, ornamental iron and bronze work, &c., and the structural iron department manufacturing such work as coal tipples, coal bins, &c.

"For nearly 35 years this factory has run continuously, commencing very small, and during the whole time there has been no labor friction whatever in connection with the factory employees. On the contrary, the best of feeling always has prevailed, and this feeling is shown by the eagerness and promptness of the employees to protect the works. In the erection of the structural material, which has been mostly done by union labor, there has never been any difficulty with the men. There has been a good deal of friction between the walking delegates, who appeared to be unreasonable. In the erection of the White Automobile Works, covering four acres, the plant was erected quicker than any other job of its size in this country, i. e., in 30 days. The erectors disregarded the walking delegate entirely. There is no trouble in connection with the actual labor employed and never has been. The motive of the outrage referred to is not with the employees of the Van Dorn Iron Works, either union or non-union."

Fire Prevention.

Powell Evans, president of the Merchant & Evans Company, Philadelphia, delivered an address on "Fire Prevention" before the National Association of Manufacturers at its convention in New York, May 20, which has been printed in pamphlet form. This address is the result of years of painstaking study and inquiry on the part of Mr. Evans. He has gathered numerous facts bearing on the very great desirability of the adoption of measures to check the great loss which is annually visited on this country by fire. He gives statistics of annual fire losses, making comparisons of the huge total with the annual revenues of the United States Government, the net earnings of railroads in the United States, the

dividends paid on railroads, &c., showing in a most effective way the magnitude of such losses. He puts the total fire loss of 1907 at \$215,671,250.

It would appear that the national loss in this way is increasing, as the fire loss of 1907 was greater than for any previous year. In January of the present year by far the worst record ever known was made in the losses sustained in the United States and Canada, aggregating \$29,582,600. For the first four months of 1908 the fire loss in the United States and Canada was \$91,464,600, or at the annual rate of \$275,000,000 for both countries.

He calls attention to the burden on business by the payment of insurance against fire, as well as the great loss of capital in fires themselves, and draws comparisons with the much more effective prevention of fire loss in the countries of Western Europe. He suggests that the United States Government should investigate authoritatively a proper building code for adoption by municipalities all over the country, elastic enough to be applicable to every sized city and town, The work of the National Fire Protection Association, which is the engineering organization of the insurance world, is commended. Through this association an educational campaign is conducted which is expected to result in a better fire prevention condition of property. The address is well worthy of thoughtful attention.

The Duplex Chain Wrench.

For making up joints in wrought iron pipe of various sizes, and especially large sizes, the chain pipe wrench is looked upon as the most practical device, as one tool suits a wide range of work. In the accompanying illustration is shown the Duplex chain wrench, manufactured in several sizes by the Standard Nipple Mfg. Company, Pittsburgh, Pa., for use on all sizes of pipe from 1/4 to 12 in. The smallest size weighs 13/4 lb. and is 137/4 in. long, while the largest size weighs 54 lb. and is 65 in. long.

The chain is one capable of standing a tremendous tensile strain. The jaws are made to endure the rough usage they may receive, and are designed to take hold on the pipe so that it will not slip and yet will not be cut or crushed. The jaws hold the wrench securely in



The Duplex Chain Pipe Wrench Made by the Standard Nipple Mfg. Company, Pittsburgh, Pa.

place, while the encircling contact of the chain with the pipe insures a friction hold which prevents slipping or the force of the power being exerted on the pipe in such a manner as to indent or crush it.

The wrench will work either way and reverse or release itself instantly without the need of readjusting, which saves a great deal of time and labor, particularly when it is used on large piping. Owing to the fact that a close grip is obtained on the pipe, it is explained that it is well adapted for use against walls, between floors, in corners or in ditches, as the lever has a large sweep without loss of motion in catching a firm hold on the pipe. After the chain has once encircled the pipe and the chain is caught in the catches provided in the lever handle, it is only necessary to release the grip to permit the position of the wrench to be shifted so that the pipe can be moved in the opposite direction, or screwed up or unscrewed, as may be necessary. This convenience obviates the necessity of seeing that the wrench is on the pipe in the right way, for there is no wrong way with this wrench,

The Production of Coal in 1907.

GREATEST RECORDED OUTPUT.

Practically complete returns to Edward W. Parker, statistician in charge of the division of mineral resources, United States Geological Survey, show that the production of coal in the United States in 1907 not only far exceeded any previous record, but also exceeded by a considerable amount all estimates of the output for that year.

The aggregate production of anthracite and bituminous coal in 1907 amounted to 480,450,042 net tons, valued at \$614,831,549, against 414,157,278 net tons, valued at \$513,079,809 in 1906. The increase in production in 1907 over 1906 was 66,292,764 net tons, or 16.01 per cent. in quantity, and \$101,751,740, or 19.83 per cent. in value.

Of this large production in 1907, 76,432,421 gross tons, or 85,604,312 net tons, were anthracite coal from Pennsylvania. In 1906 the production of Pennsylvania anthracite was 63,645,010 gross tons, or 71,282,411 net tons, valued at \$131,917,694, so that the increase in the production of hard coal in 1907 amounted to 12,787,411 gross tons, or 14,321,901 net tons, with an increase in value of \$31,666,362.

The total production of bituminous coal in 1907 was 394,845,730 net tons, valued at \$451,247,493, an increase over 1906 (when the production amounted to 342,874,867 net tons) of 51,970,863 net tons, or 15.16 per cent. The value of the bituminous production increased from \$381,162,115 in 1906 to \$451,247,493 in 1907, a gain of \$70,085,378, or 18.39 per cent.

Decrease in Only Two States.

Of the 31 States in which coal was produced during 1907, there were only two in which the output in 1907 was less than that of 1906. These were both unimportant producing States—California and Oregon—and in both the decrease in production in 1907 was due to the increased production and use of oil for railroad and manufacturing purposes. Nearly all of the coal mined in Oregon is sent to San Francisco, and the increase in the output of California oil has materially reduced the production of coal in Oregon.

Had it not been for the depressed condition of the iron and steel trade, which followed the financial depression of October, 1907, the coal production for the year would undoubtedly have exceeded a total of 500,000,000 tons, and the value would probably have exceeded \$650,000,000. As it was, the value of the coal product of 1907 exceeded by 68 per sent, the value of the total mineral product of the United States in 1880, and was nearly equal to the value of the entire mineral product of the United States in 1897, only ten years before.

The average price for bituminous coal at the mines in 1907 was \$1.14, against \$1.11 in 1906 and \$1.06 in 1905. The average price in 1907 was higher than that in any other recent year except 1903, when prices were abnormally high because of the famine produced by the great anthracite strike in 1902. The average value of the anthracite produced in 1907, taking into consideration the quantity of coal used at the mines in the operation of properties, was \$2.14 per gross ton, as against \$2.05 in 1906. Excluding the quantity of coal used in the operation of the mines, which is designated as "colliery consumption" and which has been in the past considered an unmarketable product, the value at the mines of the anthracite coal produced in 1907 was \$2.39 per gross ton, against \$2.30 in 1906.

Illinois Again in Second Place.

An interesting feature in connection with the coalmining industry in 1907 was the re-establishment of Illinois in second place as a coal producing State, its production in 1906 having been exceeded by that of West Virginia.

Pennsylvania continues to outrank all of the other States in coal production, for in addition to the 85,604,-312 tons of anthracite produced in that State in 1907, there were also 150,321,437 tons of bituminous coal, making a total of nearly 236,000,000 net tons for Pennsylvania alone.

A Red Letter Year.

The year 1907 may be considered a red-letter year in the history of the coal-mining industry. In addition to the enormously increased production and the general advance in prices, a condition of peace reigned generally throughout the coal-mining regions, this being the result of the labor agreements made in 1906 after the suspension on April 1 of that year.

Production by States.

The following table gives the quantity and value of the coal production in the United States in 1907, by States:

Quantity and Value of Coal Produced in the United States in 1907, by States.

	Quantity	
State or Territory.	(net tons.)	Value.
Alabama	14,250,454	\$18,405,468
Arkansas	2,670,438	4,473,693
California und Alaska	24,089	91,813
Colorado	10,790,236	15,079,449
Georgia	362,401	499,686
Idaho	*7,588	*31,119
Illinois	51,317,146	54,687,382
Indiana	13,985,713	15,114,300
Iowa	7,574,322	12,258,012
Kansas	7,322,449	11,159,698
Kentucky	10,753,124	11,405,038
Maryland	5,532,628	6,623,697
Michigan	2,035,858	3,660,833
Missouri	3,906,294	6,399,616
Montana	2,016,857	3,907,082
New Mexico	2,628,959	3,832,128
North Dakota	347,760	560,199
Ohlo	32,142,419	35,324,746
Oklahoma (Ind. T.)	3,642,658	7,433,914
Oregon	70,981	166,304
Pennsylvania:		
Anthracite	85,604,312	163,584,056
Bituminous	150,321,437	155,837,770
Tennessee	6,810,243	8,490,334
Texas	1,648,069	2,778,811
Utah	1,947,607	2,959,769
Virginia	4,710,895	4,807,533
Washington	3,680,532	7,679,801
West Virginia	48,091,583	47,846,630
Wyoming	6,252,990	9,732,668
Total	480,450,042	8614,831,549

*Includes production of Nebraska and Nevada.

The t nited States Leading the World.

Great Britain's production of coal in 1907 was 267,-828,276 gross tons, or 299,969,669 net tons, and Great Britain is the second coal-producing country of the world. The coal production of the United States in 1907 exceeded by 189,480,373 net tons, or more than 60 per cent., that of the British Isles. It was more than double that of Germany, and was equal to 40 per cent. of the total coal production of the world.

The American Steel Foundries Readjustment.-The stockholders of the American Steel Foundries, at an adjourned meeting held in Jersey City June 12, formally approved of the plan submitted to them last fall for a readjustment of the company's capitalization by which the present preferred and common stock is to be retired and a new issue of one class substituted. The plan also provides for the satisfaction of accumulated dividends on the preferred stock through the distribution to the preferred stockholders of 4 per cent, debentures running for 15 years at the rate of \$1,000 in bonds, with every \$5,000 par value of the new stock given in exchange for the old preferred. In addition a 3 per cent. cash payment is to be made. The basis upon which the new stock is to be given in exchange for the old preferred is 70 shares for each 100, and for the old common stock 25 shares for each 100. The total issue of new stock is \$17,184,000, as compared with a total of \$37,650,000 of old common and preferred.

The Association of Iron and Steel Electrical Engineers will hold its first annual convention June 24 and 25 in Philadelphia. The place of meeting will be in the home of the Engineers' Club, 1317 Spruce street. The association headquarters will be in the Hotel Walton.

THE IRON AGE

Established in 1855.

New York, Thursday, June 18, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

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		-		-				
CHARLES KIRCHHOFF			-	-	-	600)
GEO. W. COPE, -				-	-			- EDITORS.
A. I. FINDLEY, -	-		- 00	-	-	-)
RICHARD R. WILLIAMS,	-			-	-	-	-	HARDWARE EDITOR.

Conventions and Foundry Progress.

It has seemed at times as though the amount of foundry literature produced in the United States in the past ten years has been out of proportion to the amount of real progress the foundry industry has made in that interval. Data have been poured out generously by the experimenters in cast iron, and figures have been tabulated sufficient to fill volumes; but there has always remained the question, how far the rank and file of foundrymen have been reached by these abundant labors. President Flagg of the American Foundrymen's Association may have had this condition in mind when he said in his address at Toronto that the time has come when the association must carry its work farther; that page after page of analyses have been put on record; and now it is in order to know more of what these analyses mean; that there has been much traversing of old lines in the discussions of the foundrymen's associations, and now new investigations must be taken up, particularly in the lines of chemistry and metallurgy.

Only within two years has the educational value of the foundrymen's convention been really appreciated. In the early days of the American Foundrymen's Association its annual meetings were looked upon more as an outing for proprietors, superintendents and foremen than as a school of instruction. The entertainment features had the right of way, and in the slimly attended sessions for the reading of papers only a few participated in the discussions. An attendance of 300 to 400, with a ratio of 1 to 1 of supply men to foundrymen, was usual, and sometimes the 300 mark was not reached. The organization and rapid rise of the National Founders' Association and the concentration of attention and resources upon foundry labor issues detracted so much from the movement for the betterment of practice that for a time it seemed that the original association was doomed. And the point was reached several times where, but for the determined and unrewarded labors of its secretary, Dr. Moldenke, it could have quietly and conveniently passed out of existence.

The contrast between the moribund condition of a few years ago and the splendid vitality shown at the Toronto convention last week is a marvel. The record registration of 1430 reached at Toronto would not have been dreamed of three years ago. It does not explain everything to say that the change is due to the exposition features that are now so prominent; though they are to be credited largely with the increased attendance. The time seemed to have been ripe for a forward movement in foundry practice. Moreover, the law of compensa-

tion has been at work. While the National Founders' Association well nigh caused the death of the American Foundrymen's Association, the upheaval in the foundry labor situation with which the former has had much to do has brought the molding machine prominently to the front, with all other labor saving foundry devices, causing many foundrymen to journey to the annual conventions to see these machines in operation. tice of many manufacturers, to send superintendents and foremen on tours of discovery to such other shops as will admit them, is in vogue to some extent among foundrymen; but it is now found that a trip to the annual convention, where all forms of foundry equipment are in operation, may yield larger returns at much less expense. One important company with plants in different parts of the country sent 14 men holding responsible positions in its foundries, to the Toronto exhibition. Another company sent four of its foremen and in scores of cases one, two and three representatives were sent to find out about the latest appliances and exchange experiences with progressive men from other foundries. It is significant, also, that a committee of the National Association of Stove Manufacturers should appoint a meeting at Toronto during the convention, to observe and compare the operations of various molding machines, working side by side, especially as adapted to stove plate

In contrast with some previous meetings in the day of the American Foundrymen's Association's small repute, the discussions at Toronto last week had very general and very intelligent participation. If the metallurgical section of the association has not thrived as a separate organization, there is a better diffusion throughout the body of a knowledge of practical foundry metallurgy, for a new generation of foundrymen has come up since the association movement started. While the mechanical side of the business seems to have the greatest prominence at conventions, because demonstrations with machines are spectacular and convincing, there is a more careful study than ever of the composition of foundry raw materials-of sand and coke, as well as pig iron, which for so long monopolized attention. It was evident, too, from the discussions at last week's convention, that heat treatment is the subject of much experiment, and that important results are to be expected. The consideration of the effect of titanium on cast iron, of the use of permanent molds in the foundry, of more scientific cost finding systems, and of the most approved methods of casting automobile cylinders showed that many talented men are at work on foundry problems and are making their impress upon present-day practice. It would seem, in short, that the modern foundrymen's convention has brought the practical abolition of the day of the foundry's reproach.

The Protection of Foreign Patents.

The incorporation of the compulsory working clause in the British patent act appears to have created almost a sensation in industrial circles in Germany. Other European nations have found the matter one for serious consideration, although their own laws include the same provision. The Germans are threatening to make more sternly operative that section of their patent act which accomplishes the effect of compulsory working on penalty of revocation of the patent. In America the feeling long existing that some similar measure should be introduced into the patent system has been strongly stimulated by the example of Great Britain, and probably

will grow still more rapidly as our manufacturers realize more fully what the effect of the new condition in the United Kingdom and that promised for Germany will mean to them. The general subject, with special attention to the British act and the need of similar legislation in America, was discussed editorially in The Iron Age of March 5. Since that time the British act has gone into force, and the press of other countries, notably Germany, apparently inspired by industrial interests, have had much to say on the question, including the urging of reprisals. The British answer is that their manufacturers will not grumble if other nations adopt similar stringent measures, but at the same time it is pointed out that countries having protective tariffs have far less need of the compulsory working clause than has free trade England. The tariff alone, it is asserted, gives sufficient protection to the manufacturer from the importation of the products of his foreign competitors, though they may be made cheaper and perhaps better because of inventions covered by patents granted to the foreigner and unworked by him excepting at home.

The *Engineer*, London, has an interesting review of the general situation in Great Britain, Germany and the United States, which, in part, is as follows:

Although the compulsory working clause was directly framed for the purpose of securing the manufacture of commodities by foreigners of all nationalities in this country, it has been declared in some quarters to have been solely aimed at Germany; but the assumption is far from being the case, as the act is equally applicable to the United States, which country is a large exporter to the United Kingdom, and to all other countries. Not only so, but the section in question makes no discrimination between British inventors and the foreign owners of patents in this country.

The fact that British patentees are placed upon an equal footing with foreign competitors in regard to compulsory working has very largely been overlooked. It is, indeed, no more possible for British firms to secure the benefit of cheap labor in foreign countries and omit to manufacture at home than it is for foreign firms to fail to work their British patents in the United Kingdom. British inventors will be liable to have their patents revoked unless they give satisfactory reasons why the patented articles are not manufactured or the patented processes are not carried on to an adequate extent in this country.

The act is not directed against the foreigner; it is directed against the misuse of patent rights. Nothing can be fairer and more reasonable than that, and Englishmen will be the last to grumble if it is true, as reported, that the question of compulsory working has also been brought forward in the United States, where proposals are under consideration for an alteration of the patent act in the sense that foreign holders of United States patents should be compelled to work them in that country within a stipulated period.

The German Government, according to the Berlin Tageblatt of May 23, should now wait no longer in view of the developments in the United States, following upon the enactment of compulsory working in the United Kingdom. The German newspapers contain advertisements offering sites for the erection of works in Great Britain, and capital is being diverted from the former to the latter country. It is, of course, impossible to arrest this migration, unless arrangements are made with British firms for manufacturing by license under the foreign patents granted by the Patent Office. Nevertheless, it is considered that the German Government should assume an attitude of defense by putting into operation Section 11 of the German Patent act. This particular section provides that at the end of three years patents held by foreigners can be revoked if the owners fail to work the invention in that country. The section has hitherto, it is said, remained inoperative, but the Berlin newspaper suggests that it should not be unwelcome to the Government if the various manufacturers forming one branch of business were to combine and demand that foreign inventions should either be carried on in German workshops or the patents declared void. In this way, it is contended, many British and American exporting industries, as, for instance, the makers of typewriters, machine tools and agricultural machinery, would be compelled to establish branch works in Germany.

We must not, however, lose sight of the fact that the conditions in the United Kingdom are very different from those in Germany and the United States. In both of these countries high import tariffs exist, and it is in their power to make the importation of many things practically impos-

sible. The need of compulsory working is, therefore, comparatively small, as their industries are already protected from foreign-made manufactures. Under free trade, on the other hand, we cannot exclude foreign-made goods, and it has become absurd that we should actually assist the foreign importer by refusing permission to the home manufacturer to compete with him.

While it is true that our protective tariff operates to the especial advantage of our manufacturers, it does not cover the case of our foreign market. Our industries can be better protected abroad in competition with those of other countries if compulsory working is made a principle of our patent laws. If the foreigner can patent his invention in the United States, and permit it to lie idle so far as employing it in manufacturing in this country, and with benefits resulting from its use can meet his American competitor abroad at an important advantage, then the failure to adopt the compulsory working is an injustice to American industries. To be sure, if the foreign manufacturer establishes works in this country he may, because of the ownership of the invention, be a more formidable adversary in the home market than would otherwise have been the case, but by so doing he would become an American manufacturer and employer of labor, a purchaser of American raw materials, equipment and supplies, and thus add to the national welfare. If, under compulsory working, he should not establish works here, then he must either dispose of rights to American manufacturers, or else the latter might cause the patent to be revoked after the period specified by law and employ the invention as if no patent had ever existed.

The mere existence of the clause in the German law, courled with the German tariff, has resulted in the establishment of branch works of American industries in that country. It has been the influence through which Germans have procured rights which would not have been for sale otherwise. If it is true, as now declared, that the law has been practically inoperative, then its rigid enforcement should be much more sweeping and serious in its effects. With no thought of retaliation, it is just to assume that what is good for the industries of other great nations, as frankly acknowledged by them, must be equally good for our own.

The Steel Car Repair Account.

Reference has been made to the results of experience with steel cars in the matters of maintenance and repair. In the earlier days of their use steel cars made a more favorable showing, it was thought, than might be the case later, since in the wrecking of trains made up of both steel and wood cars the latter would get the brunt of the damage. With solid trains of all-steel cars it was expected that steel against steel would run up a much heavier metal working bill in case of accidents. This proved true; but more than an offset was the experience of a system having over 100,000 steel cars in use. It was found that a steel car after being in a wreck that would totally destroy the body and frame of a wooden car could be repaired for about \$50; also that a steel hopper car so badly wrecked that scrapping was considered was repaired at a cost

More recent data on the subject are furnished by the Railroad Age Gazette, which gives a three-year record of the cost of repairs to steel and wooden cars on the Harriman Lines, the period ending with September, 1907. All cars of steel or composite construction were included on one hand, and on the other substantially the same number of wooden cars of like age and capacity. The

average monthly cost of repairs to steel cars in the three years was \$2.89 per car, and of repairs to wooden cars \$4.24 per car. The average total yearly saving on the steel cars was \$147,037. If this amount were capitalized at 4 per cent, our contemporary figures that it would buy more than 3000 new steel cars at \$1200 each.

In the same connection reference is made to the results secured with the all-steel box cars of the Union Pacific type, which have been in service over a year on that and other Harriman roads. These cars have stood the roughest service known on this road, carrying 90,-000 lb. of coal, and under weeks of this severe treatment showed no bad effects. Nor was there complaint of damage to any class of freight carried, because of the heating up of the metal sides under the high temperatures, 130 degrees at times, of the desert country traversed by the Southern Pacific. Being 3750 lb. lighter than a standard wooden car of the same capacity, a steel box car represents an important saving in operating cost. At an average travel per car of 10,000 miles a year on the Southern Pacific, a steel car gives a yearly reduction of over 16,000 gross ton miles, which on the basis of the operating cost of that road would mean an annual saving in operating cost of over \$20 a car.

Niagara Falls Power Conditions.

At 1 o'clock on the morning of Sunday, June 14, the Niagara Falls Power Company shut down its two big generating plants, closing off all water from the tunnel in order that the International Railway Company might make a thorough inspection of the condition of one of the American abutments of the great upper steel arch bridge, which it owns. This abutment stands very close to the water that rushes out from the portal of the tunnel, and it has loug been suspected that it was in danger. In fact, unsuccessful efforts had been made to protect it with steel plates on the portal stream side. When the water was off a large force of men, including three divers, worked about the abutment making the examination. It was found that the rushing water had eaten away the shale back of the retaining wall, having got in under the wall, which does not appear to have been given a proper foundation. The damage can be repaired, now that the extent is accurately known. gineer R. S. Buck, and Mr. Moran, the latter of the Foundation Company of New York, were present at the

The Niagara Falls Hydraulic Power & Mfg. Company also shut down its power houses and joined with the Niagara Falls Power Company in making it possible for members of a lake survey corps to take levels of the river above the Falls of Niagara at a time when no water was being diverted for power purposes. of the water in the river was naturally high that morning, but, as there was no wind, the time was ideal for the effort to secure data as to the river's flow at a time when the American Fall was receiving all the water that would naturally flow over it. It is understood that the levels taken at Prospect Point indicated a rise of 11-5 in. in the level there.

While the power stations were shut down, the Niagara Falls Power Company had its engineering corps make a very complete investigation of the wheel-pits, the tunnel and the giant power producers. It was about 1:45 a.m. that the first party went down into the tunnel. The pits and tunnel were found in ideal condition. few brick had dropped out of the roof in the connecting tunnel between the pits, but this was of little moment. There was a slight leakage through the brick lining here and there. The water line, as shown in the tunnel, indicates clearly that the tunnel, which is 21 ft. high by 18 ft. wide, is of sufficient size to carry off all the discharge of the two great stations. The inspection greatly pleased the power company. At 9:30 a.m. the first machine was thrown in, and at 11:20 a.m., all the big generators were again carrying their accustomed load. All the Niagara factories closed down during the inspection, but the Canadian Niagara Power Company's station carried the trolley load of the western New York section served from these great stations. A number of people were guests of the Niagara Falls Power Company in the trip through the tunnel.

Coal Briquetting.

For the purpose of determining the extent to which the manufacture of briquettes from slack coal may succeed under the conditions existing in the United States an investigation has been carried on at the fuel testing plant of the United States Geological Survey at St. Louis by James E. Mills, whose report on the work has just been published by the Survey as Bulletin 343. The problem to be solved was not alone how to make the best possible briquette, but how to produce at a profit a briquette of satisfactory grade for the use intended with the slack The experiments made by Mr. and binders available. Mills include tests of the behavior of a large number of different coals with a few binders and of a few coals with a large number of different binders. Tests were made with each coal and with each binder until the percentage of binder required to produce a satisfactory briquette with that coai was determined. The behavior of the briquettes in the fire and, when necessary, in water, was noted. The binders used were examined as to their chemical or physical properties, and such modification of each binder was made as seemed likely to produce most efficient results. The desirable qualities of a binder are stated by Mr. Mills as follows:

1. It must be sufficiently cheap to make the manufacture of

briquettes profitable.

2. It must bind strongly, producing a briquette sufficiently hard but not too brittle.

3. It must hold the briquette together satisfactorily in the

4. It must produce a briquette sufficiently waterproof to stand the conditions of use.

5. It should not cause smoke or foul-smelling or corrosive gases, nor should it foul the flues.

It should not increase the percentage of ash or clinker. 7. It should not increase the percentage of ash of the heat units obtainable from a given weight of fuel.

The experiments show that in general, for plants situated where it can be obtained, the cheapest binder will prove to be the heavy residuum from petroleum, often known to the trade as asphalt. This is particularly available in California, Texas and adjacent territory. Second in importance comes water gas tar pitch, and third, coal tar pitch. Of local importance, where the price permits, are natural asphalts and tars derived from wood distillation. Pitch made from producer gas tar will produce excellent briquettes with a lower percentage of binder than other coal tar pitches. It is not yet on the market, but will doubtless be available in the future. Starch, waste sulphite liquor from paper mills and magnesia may also be utilized as binders for briquettes.

Mr. Mills' report, which contains details of his experiments, may be obtained free of charge by applying to the Director of the Geological Survey at Washington,

The first temporary cable between the towers of the new Manhattan Bridge, New York City, was stretched June 15. This will be followed by 15 others, and from these will be suspended the footpaths for the workmen who are to build up the four 21-in. permanent cables. Each of these cables will be composed of 9742 galvanized steel wires 192-1000 in. in diameter. The suspenders for the bridge structure will be 1%-in. wire ropes, and the shore spans as well as the water span will be supported from them as in the Brooklyn Bridge. The assembling of the main cables is expected to begin in August, and it is estimated that the bridge will be ready for service by the end of next year. The Manhattan Bridge, specifications for which were printed in The Iron Age July 27, 1905, will be the third and largest between Manhattan and Brooklyn boroughs. The Blackwell's Island Bridge extends from Manhattan to Queens Borough.

Seattle Business Notes.

SEATTLE, WASH., June 9, 1908.—An offer of \$2,000,000 has been made by the Chicago, Milwaukee & St. Paul Railroad for the site of the Moran Brothers Company's shipbuilding plant on the Seattle waterfront. The deal is still pending, but it is likely to be closed within the next few days. The owners of the shipyard have been holding out for \$500,000 more. It is likely that a compromise will be reached, as the Moran interests have been considering plans to move their plant away from the center of Seattle. They have long been of the opinion that their works could be much more economically conducted were they in an outlying location in the low taxation district.

When the Moran yards were laid out, years ago, Seattle was a mere village compared with its present proportions. At that time the plant represented the extreme southern limit of Seattle's waterfront. Since then the Moran frontage has been completely surrounded by big works, docks, railroad yards and large improvements generally, so that it is really much too valuable for its present use, when it is considered that the establishment does not require a location in the center of the city. the plant will be moved is a question, but the managers are casting about Puget Sound for a suitable location. It has been suggested that a site may be acquired at Irondale, near Port Townsend, where a blast furnace is located. The furnace company is headed by James A. Moore, who is also president of the Moran company. Eagle Harbor, directly across from Seattle, is also suggested. Improvements planned for the plant will reach \$500,000.

The founders of the company, the Moran brothers, sold the establishment a couple of years ago, after building the battleship Nebraska, which was the biggest piece of work they ever undertook. To aid in its construction, in fact to make the building of the battleship in Seattle possible, the people of the city gave the Morans \$100,000 in cash as a bonus. The new owners of the concern are largely Philadelphians and other Eastern men, and they sent George H. Higbee of the United States Shipbuilding Company to Seattle to take charge of the works. He not long ago resigned to return to Philadelphia.

The Chicago, Milwaukee & St. Paul Railroad, which expects to complete its Pacific Coast extension by the middle of next year, had made large purchases of terminal grounds in Seattle, but needs more water frontage. Work on its Seattle properties began last week. The Union Pacific has also begun active operations in Seattle, and the fact that work for the two lines was taken up simultaneously has revived the old rumor that both will make use of the same terminals.

The Washington Iron Works Company, Seattle, one of the largest and oldest establishments of the kind in the Northwest, whose charter is about to expire, has petitioned the Superior Court for permission to disincorporate preparatory to a reorganization as the Washington Iron Works. The company was formed in 1881 with a capital stock of \$100,000. The stockholders are J. M. Frink, Gerald Frink, Egbert Frink, Francis G. Frink, W. P. Fuller and Fred W. Fuller. The company is in excellent financial condition and is arranging for large improvements.

The Vulcan Iron Works, Seattle, is planning to move to Georgetown, a suburb, and is seeking a site of 50 acres. It is estimated that about a year will be required to construct the new plant. The enlargements planned will increase the capacity considerably. Fifty thousand dollars has been offered for a site, and the people of Georgetown may give a bonus.

A large shipment of steel pipe from Germany has arrived in Seattle to be forwarded to Alaska, where it will be used in mining operations by the Guggenheims. The pipe makes 31 carloads, is 44 in. in diameter and is in 30-ft. sections, each section weighing 5 tons. It is constructed in accordance with severe specifications for the main pipe line of the hydraulic works which the Guggenheims are building near Dawson and will be used for the inverted siphon which is to cross the Klondike River valley for the mines below.

The Seattle Hardware Company was awarded the con-

tract by the Government to supply part of an order of brass pipe and fittings for the Atlantic squadron, a part of which has been undergoing repairs at the Puget Sound Navy Yard. The total amount of the order was \$5000. The other successful bidder was the A. Hambach Company.

The Seattle Car Mfg. Company has given estimates to agents of the Sun Ning Railway Company of China on the cost of 20 freight cars, and instructions have been received to make the shipment across the Pacific as soon as possible. The builder of the railroad is Chin Gee Hee, who made a large fortune in Seattle years ago in the old Chinese mercantile firm of Wah Chung. His sentimental regard for this city, along with other considerations, has sent to it many orders for material. The cars to be built for the line under this order will cost \$15,000. Regarding the railroad, Chin Keay, Seattle representative of the builder, says:

The Sun Ning Railroad is now operating 20 miles of road between Ning Hal and Sun Kup. As soon as the building can be carried forward it will extend from 160 to 200 miles. I have a letter from a Philadelphia firm asking for information regarding this order of cars, but we like to get as much of our equipment as possible in Seattle, and in the future will place large orders. There are about 40 Seattle stockholders in the railroad. About a month ago I shipped a pile driver, engine and all, to the Sun Ning Railroad. I have been informed that other machinery of this kind will be needed this summer. The cars should be finished within three or four months, and perhaps by that time I will be able to place still more orders. The railroad is a paying enterprise so far. It is the plan to put parts of the line into operation as rapidly as possible, so that there may be returns immediately from the investment. The company is capitalized at \$3,000,000, all paid in.

Fire last week destroyed three machine shops of the Victoria Machinery Depot Company, Ltd., at Victoria, B. C., doing damage amounting to \$180,000. Insurance amounted to \$30,000.

Customs Decisions.

Hematite Iron Ore.

For the second time, the Government met with defeat last week when the United States Circuit Court of Appeals at Philadelphia refused to reverse the lower courts in holding that hematite iron ore is dutiable at 40 cents per ton under the provision in the tariff for this material. The merchandise in controversy was imported by Francklyn & Ferguson, Philadelphia. The customs authorities assessed the product as a "pigment," with duty at the rate of 30 per cent. ad valorem. In an earlier litigation, the Government was defeated in its contention for the higher duty, but in the present case the Treasury Department hoped that, with the introduction of additional testimony, the judiciary might see its way clear to affirm the ad valorem duty. Judge Dallas, who writes the decision for his colleagues, Judges Gray and Buffington of the Appellate Court say that the additional testimony is not convincing. It, therefore, follows that the ruling of the court below and the Board of Appraisers must stand. The decision says in part:

It is contended, however, that the prior decision in this instance was had upon an incomplete record, and wholly without any such convincing and unequivocal testimony as is found in the present record as to the proper description of the merchandise as "pigments." In view of this contention, so much of the testimony as was not adduced in the preceding one has been considered with especial attention. But we have not been convinced by it, nor by the proofs as a whole, that this merchandise should have been classed as a "pigment" and not as an "iron ore." Witnesses more or less experienced in handling similar merchandise have applied to it such inconclusive terms as "crude pigment," "dry material or dry coloring matter suitable for making paint," and the like.

In conclusion the court reaches the belief that the merchandise is in fact crude hematite ore, which in its present state cannot be used as a pigment. Nothing in the record submitted by the Government tends to change the impression created on the first trial of the issue.

Negotiations are pending for the absorption of the Heany Fireproof Wire Company and the Teter-Heany Developing Company, York, Pa., by the Habirshaw Wire Company, Yonkers, N. Y. It is probable that the deal will be consummated in the near future.

The Dominion Iron and Steel Company.

The result of the operations of the Dominion Iron & Steel Company, Sydney, Nova Scotia, for the year ended May 31 compares as follows with the two preceding years:

Total net earnings Interest payments	1908. \$2,613,825 696,814	1907. \$2,247,536 684,384	1906. \$1,406,305 694,532
Surplus		\$1,563,152	\$711,774
Cr.	account sno	ws.	
Brought forward Net for 1907-08			\$318,711 1,917,011
Total		*******	\$2,235,722
Transferred to contingent for Sinking fund			\$1,376,831 69,712 789,179
Total		*******	\$2,235,722

Earnings, says the report, have again to be considered in the light of the judgment against the Dominion Coal Company, which entitles us to recover cost of coal in excess of the contract price of \$1.28 per ton. As in the previous year, all coal used has been charged against operations at the contract price, and on this basis earnings for the year were \$2,613,815. The various departments have been carried on steadily throughout the year, with increased production and lessening costs. The output of steel reached 290,953 gross tons, against 235,505 tons in 1907.

The effect of the dullness of trade which set in last autumn has not been felt to any serious degree. There is already a perceptible increase in the demand for our products, which indicates reviving confidence, but until a return of prosperity is fully assured, the directors think it best to pursue a conservative policy.

Floating liabilities are larger than usual, but the increase is more than covered by further increase in value of raw and finished materials on hand. A considerable portion of finished materials are merely awaiting shipment. The increase in floating liabilities is due to both increased business and to the change in its character, at a time when a large part of earnings have temporarily to be paid over to the coal company. In view of the larger working capital we are henceforward likely to require, the directors think it well that a scheme for reorganization of the company's finances should now be under consideration. As a preliminary step, the stockholders will be asked at the annual meeting to authorize an increase in the capital stock, and the creation of consolidated mortgage bonds. The claim of damages against the coal company is as follows up to May 31:

Paid for extra cost of coal purchased	\$1.847.450
Paid for extra cost of coal purchased from others	
Damages due to short deliveries in August, Septem-	
ber and October, 1908	
Damages due to cessation of deliveries in Novem-	
ber. 1906, estimated	479,000
	-

Efforts have recently been made by friendly intermediaries to bring about a settlement of the suit, but without result. No definite offer has ever been received by the steel company and the most favorite arrangement put forward as likely to be acceptable to the coal company—in other words the best settlement which it appears open to us to make—is not one which the directors could recommend. The directors are not disposed to act in an unreasonable or litigious spirit and any settlement which deals justly with the rights of the steel company will receive their recommendation, notwithstanding it may fall a good deal short of the rights accruing under the strong judgments in the company's favor.

The May issue of the American Wire Rope News, published by the American Steel & Wire Company, is unusually interesting. The leading article, which is contributed by W. L. Jackson, chief engineer of the First National Bank Building, Chicago, describes "The Different Kinds of Elevators" as used in buildings. The

second article is entitled "Wire Rope on a Battleshlp," and shows the important part which such rope plays in war vessel construction. E. W. Green furnishes an article entitled "Wire Rope on the Great Lakes," and describes how this rope enters into the equipment of great ore carriers. An article by H. A. Whitney, entitled "Patent Non-Spinning Wire Rope," describes how rope is constructed so that it will not rotate while a load is being hoisted. J. E. Evans furnishes an article entitled "Crushing Strains," which treats of the action of rope running over drums and sheaves. The concluding article treats of "Wire Rope in Stone Quarries" and gives much information regarding the quarrying of stone by machinery in addition to the part played in this work by wire rope.

The Hanson & Van Winkle Cold Galvanizing Process.

On June 8 Judge Cross of the United States Circuit Court for the District of New Jersey handed down an opinion in favor of the Hanson & Van Winkle Company of Newark, N. J., and Chicago, Ill., in a suit for infringement brought by the United States Electro Galvanizing Company. The suit was founded on reissue patent 11,624, issued August 3, 1897, to Hans Alexander, assignor to Louis Potthoff. The decision traverses the evidence in the case, which is unnecessary to be reproduced here, but it makes plain the fact that the suit for infringement could not be maintained. The judge says:

The specification of the patent, with the testimony, makes it clear that the bath of the patent is necessarily basic and was so intended. The defendant's bath, on the contrary, is acid and contains free sulphuric acid; it is the opposite of the basic bath, and not only is it acid in the first instance, but it is maintained so by the introduction from time to time of additional acid to keep it in proper working condition.

The judge quotes approvingly from the testimony of Professor Chandler, the eminent chemist, who said:

The defendant's bath is not the bath of the patent in sult, nor is it any one of the baths of the patent in sult, nor is it the bath of any one of the claims of the patent in sult.

Defendant's bath is not prepared in the same way as the bath of the patent in suit. The most striking feature of the patent in suit is the employment of a bath containing basic salts, and extraordinary means are resorted to in the specification to render the bath basic; that is, to secure a bath in which the salts shall be the basic salts of aluminum and zinc.

No such conditions as described in the specification exist in defendant's baths. The baths are not basic baths. No such extraordinary methods are employed to render them basic as are described and claimed in the patent in suit. In fact, the very opposite treatment is resorted to.

The opinion concludes: "For the following among other reasons, then, the defendant does not infringe: It does not make the alloyed coating of the patent; employs no basic salts, but rather makes and maintains throughout an acid bath; does not use chloride of aluminum in its salts; does not use any organic substances with its salts or bath, or any equivalent thereof; and its bath is composed in part of different ingredients from the complainant's, is prepared differently and under different conditions, and its ingredients, insofar as they are the same, appear in different proportions. The bill of complaint will accordingly be dismissed with costs."

The Hanson & Van Winkle Company is gratified that, after a contest which it has conducted single handed and at great expense for six years, its process has been pronounced free from claims of infringement. It will proceed to install at once in the larger cities outfits in connection with its improved mechanical devices to show the prospective users the advantage of its methods.

Andrew Dall & Son, Cleveland, Ohio, have recently placed an order with the New York Belting & Packing Company, Ltd., for the installation of interlocking rubber tiling in the Cuyahoga County Court House, Cleveland, Ohio, amounting to \$125,000. This is believed to be the largest order for rubber tiling ever placed. The contract was secured after an exhaustive examination into its merits. The tiling will be laid in the large court rooms, corridors, judges' chambers, ante-rooms, &c., in different designs to conform with the color scheme of the various rooms.

Slag Cars for Open Hearth Furnaces.

H. E. Smythe, president of the S. R. Smythe Company, Pittsburgh, Pa., furnishes the accompanying drawings, which illustrate a patented system of cars for the removal of slag accumulations from the slag pockets of open hearth furnaces. Provision is made for cooling the cars to prevent destruction from heat and to seal the space between the cars and at the top, so as to prevent any leakage or connection between the cars and the interior of the furnace or gas and air uptakes or the pockets. It is in the base of the pockets or uptakes that the slag is deposited, consisting of lime, metallic substances, fluxes used and material from which the furnaces are constructed, all of which fuses and becomes a solid mass, which is practically as hard as the steel itself.

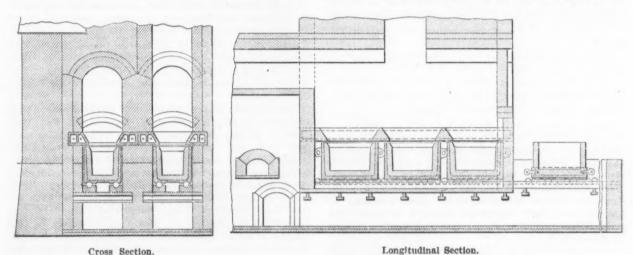
The only present methods of removal of such slag are by sheer physical force or manual labor, necessitating the closing down of the furnace so that men can enter the pockets. Not only is the accumulation of this slag a detriment to the operation of open hearth furnaces when it amasses in large quantities, but it destroys the walls or lining of the pockets, the replacing of which is a continual source of expense. The cost in time and labor of removing slag by present methods is so great that a superintendent will operate a furnace as long as he possibly can; in fact, will often run it until the slag so accumulates

as to take care of this accumulation of slag and removed when making customary repairs. But the object is to provide for the removal of slag often and at the pleasure of the superintendent.

The plan herewith shows the cars made in three sections. It will be preferable to make them either in one or two sections. The cars are supported on cast iron grooved tracks. Cast iron balls, 7 in. in diameter, are used, over which the cars roll to the pit at the back of the furnace. The tracks are supported on cast iron bearing bars and plate, having an air space entirely under the cars, the air for circulation being introduced at the neck or chamber leading from the regenerators through an air duct to the pit at the back of the furnace.

The seals in the walls at the top of the cars, along their sides and at the end next to the regenerators consist of hollow cast iron water cooled supporting bars. These not only protect the top of the cars and divert the slag to the cars, but they also increase the life of the silica walls forming the division wall and lining for the port uptakes and pockets.

The construction is durable and substantial, the cars being protected from the heat. The water cooled mantle plate seals can be eliminated if desired and the type of car used having a cast iron bottom only, upon which the brick lining is built. This car, when filled with slag, can be run out of the furnace to the pit under the traveling



Slag Cars for Open Hearth Furnaces as Built by the S. R. Smythe Company, Pittsburgh.

that there is no room left for the gas and air to pass into the furnace. Of course the greater the accumulation of slag the more difficult and expensive it is to remove.

The system of slag cars here illustrated, which is applicable to any furnaces having slag pockets, has been devised to overcome and reduce to a minimum these troubles, delays and expensive conditions. The method is mechanical and practical, being the production of William Carr and H. E. Smythe, both of whom have had many years' experience both in building and observing the operation of steel furnaces. The cost of installation is not expensive, and, further, it costs little to maintain.

The cars for each pocket can be made in one section or more, with seals between and along the sides. Two designs of cars can be used, one with cast iron sides and ends, lined with fire brick, or one with cast iron bottom plate and a cast iron rim around the top lined with fire brick.

In both cases the cars can be pulled out into a pit at the back of the furnace, there secured to an overhead traveling crane and taken to a point where they can be conveniently dumped. Empty cars can be in readiness to be placed in the pockets, the ends being at once bricked up, thus completing the operation every week, month or as often as deemed necessary. This can be done without loss of output, as the cars can be removed and replaced at any time between Saturday and the Sunday shutdown, or at any time when the gas is taken off the furnace. Should it be desired not to shut the gas off during a continuous run of the furnace, the cars can be constructed so

crane and all the slag, including the brick lining, can be dumped at one time, the latter being a small item of expense.

A New Cincinnati Chuck.

An improved independent chuck with reversible jaws is made in sizes from 8 to 24 in, by the Cincinnati Chuck Company, Cincinnati, O., which was organized nearly a year ago. The company's shop is on the second floor of the Triumph Mfg. Company's new building, at Sassafras street and Spring Grove avenue, Camp Washington. The floor space is 60 x 100 ft. and the shop's capacity 300 chucks per month. Eventually the company expects to include several other types of chucks in its line. Spindle steel is used for all screws, and the bodies are extra heavy. Philip Fosdick, formerly of the Fosdick Machine Tool Company, is president; R. K. Le Blond of the Le Blond Machine Tool Company, vice president, and Alpheus Collins, secretary and treasurer. The company has established an agency in London, and is arranging other points of representation in European and other foreign countries.

A considerable number of the manganese ore firms of the Caucasus have consolidated under the name of the Caucasian Manganese Ore Export Company of Poti, Russia, and Paris, and it is claimed are now in a position to guarantee deliveries contracted for with buyers.

PERSONAL.

Dr. W. H. Tolman, director of the American Museum of Safety Devices, sails for Europe June 20, to study the most recent developments abroad.

Joseph Campbell, president of the Diamond Saw & Stamping Works, Buffalo, N. Y., has just returned from a European trip, in which he has made new connections for Great Britain and Ireland. John G. Rollins & Sons, 124 Holborn street, London, E. C., who also have an office at 15 Whitehall street, New York, are now acting as selling agents for the Sterling brand of goods manufactured by Mr. Campbell's company.

Claire I. Barnes, sales manager of the Detroit Steel Products Company, has resigned that office to assume a similar position with the Billings & Spencer Company, Hartford, Conn. In addition to the usual office duties of the position, Mr. Barnes will continue to call on the trade.

Isaac W. Semans, the prominent coke operator, entertained a large number of his fellow coke operators and others prominent in local business and professional life at the Summit Hotel, Connellsville, Pa., June 4. James R. Cray acted as toastmaster, and interesting addresses were made by L. W. Fogg, A. Plumer Austin, Fred C. Keighley, John P. Brennan, E. D. Fulton and others of note in coke circles. The general themes were harmony in the coke trade and the maintenance of coke prices, but attention was also called to the "criminal waste of the by-products of coking as practiced in the Connellsville region."

Charles Raht, sales agent for the Calumet & Hecla Mining Company, sailed Tuesday for Europe.

U. T. Hungerford of the U. T. Hungerford Brass & Copper Company, New York, sails to-day for a three months' automobile trip through Europe.

G. J. Weale, private secretary to the general superintendent of the Tennessee Coal, Iron & Railroad Company's plant at Ensley, Ala., has resigned his position to accept the general superintendency of the Ontario Steel & Iron Works, Toronto, Canada.

John A. Mathews, heretofore assistant engineer at the Sanderson works of the Crucible Steel Company of America, has been appointed operating manager and general superintendent of the Halcomb Steel Company, Syracuse, N. Y.

Charles E. Lawrence has been appointed local manager of sales for the Massachusetts Fan Company, with headquarters in the Hudson Terminal Building, 50 Church street, New York City.

Dr. James Dougla's, of the Copper Queen and other copper mining companies controlled by Phelps, Dodge & Co., has sailed for Europe.

L. J. Grimmsey, who represents the machinery firm of Bagnall & Hillis, Yokohama, Japan, and who has been spending several weeks in this country purchasing machinery, left New York on Tuesday for Japan.

The Oliver Iron Mining Company has been in the market for timber for several years and is now perhaps the largest owner of standing pine in Minnesota, Wisconsin and Michigan. It is contemplating the purchase of the large sawmill plant of the Tower Lumber Company, located at Tower, on the Vermillion Range, and may close the purchase soon. This plant has an annual capacity for about 50,000,000 ft, of lumber. If bought it will be used principally for the manufacture of mine timbering for the company's operations in Minnesota.

The armored cruiser Maryland, now on the Pacific Coast, has made a record as the fastest warship of the United States navy. The Maryland on a four-hour, full speed, forced draft trial, averaged 133.1 revolutions per minute, making an average of 22.25 knots. The West Virginia, a sister ship, tried under the same conditions, averaged 131.8 revolutions and a speed of 22.1 knots. The revolutions made by both cruisers exceeded those made on the contractors' trials. The ships were handicapped by a slight adverse current.

OBITUARY.

WILLARD BEAM, San Francisco, Cal., died May 28, aged 54 years. He was born in Newark, N. J., and went to California in 1878, engaging in the iron and steel business, in which he continued up to his death. He leaves a widow, a son and a daughter.

HERMAN E. SCHNABEL, once prominent in the Western barb wire trade, died by his own hand in Chicago June 2. He had been despondent since the death of his wife, and probably over the loss of his wealth through speculation.

John R. Johnson died June 4 at his residence in Philadelphia, aged 69 years. He was head of the firm of John R. Johnson & Co., car axle manufacturers, Richmond. Va.

Henry Lomb, of the optical firm of Bausch & Lomb. Rochester, N. Y., died June 13, aged 80 years. He was born in Germany, and after receiving his education in that country he came to the United States in 1849.

SILAS J. WILLIAMS, president of the Transue & Williams Company, Alliance, Ohio, aged 65 years, died June 1 at West Harwich, Mass., where he had gone for the benefit of his health. He was largely interested in the Alliance Steel Casting Company before it became a part of the American Steel Foundries.

J. M. Robinson, until three years ago head of the J. M. Robinson Mfg. Company, Cincinnati, maker of metal working machinery, died June 15. He was a member of the Cincinnati Board of Education for 27 years, was prominently connected with the Union Board of High Schools, was a University of Cincinnati trustee, also a trustee of Christ Hospital, the Humane Society and Christie Chapel.

John Baker Roach, president of the Delaware River Iron Shipbuilding & Engine Works, Chester, Pa., died June 16 of apoplexy, aged 68 years. He was born in New York, and was trained from boyhood for a shipbuilder. On the death of his father he was elected president of the company at Chester, and has since had complete charge of the business. He was a member of the Union League of Philadelphia, the Engineers' Club of New York, the New York Chamber of Commerce, the Penn Club of Chester, the Board of Managers of the Chester Hospital, and a director in the Seaboard Steel Casting Company, the Chester National Bank and the Cambridge Trust Company. He leaves a widow, two sons and two daughters.

Another merger of technical journals has been made. On June 6 the first issue appeared of the Electric Rail way Journal, which is the name adopted for the consolidation of the Street Railway Journal and the Electric Railway Review. It is published by the McGraw Publishing Company, whose main office is at 239 West Thirtyninth street, New York, Henry W. Blake is editor; L. E. Gould, Western editor, and Rodney Hitt and Frederic Nicholas are associate editors.

The forty-second annual convention of the Master Car Builders' Association is this week in session at Atlantic City, N. J. The meetings are being held in the Greek Temple, on Young's new pier, and the Marlborough-Blenheim Hotel is the official headquarters. Next week the forty-first annual convention of the American' Railway Master Mechanics' Association will be held at the same place. Manufacturers of machinery in great variety are making extensive exhibits on the pier.

The Westinghouse Electric & Mfg. Company's employees are greatly interested in the efforts now being made to rehabilitate that company. They are showing their interest in a decidedly practical way by subscribing for stock to assist the Merchandise Creditors' Committee which is striving to raise \$4,000,000 before June 22, so that the plan of reorganization may be made effective. It is understood that the workmen will subscribe for at least \$250,000 in stock to aid the movement, in the effort to avert the disintegration of the company's property which seems to be threatened.

NEWS OF THE WORKS.

Iron and Steel.

No. 1 blast furnace of the National Tube Company at Lorain, Ohlo, is being dismantled and will be rebuilt. No. 1 and 2 skelp mills at this plant resumed operations June 8, and the entire plant is running to larger capacity than for some time.

The furnace of the Williamson Iron Company at Birmingham, Ala., will be put in operation about July 1.

The charcoal furnace of the Quinn Furnace Company at Gadsden, Ala., will be blown out about July 1.

The Youngstown Sheet & Tube Company's rod and wire mills, Bessemer steel plant and butt weld pipe mills are idle this week and were also idle last week. The company's two lap weld pipe mills, the sheet mills and the puddle mill are the enly departments in operation this week.

General Machinery.

The Elmira Foundry Company, Elmira, N. Y., has broken ground for the erection of a large machine shop in connection with its plant at Main street and Woodlawn avenue. The new building will be equipped with modern machinery throughout, which is expected to be ready for installation by August 1. When in full operation the plant will employ 100 men.

The H. G. Trout Company has been incorporated at Buffalo. N. Y., with a capital stock of \$60,000 to continue the manufacture of small engines and machinery, and the brass and iron foundry business heretofore conducted under the name of H. G. Trout and located at 226 Ohio s treet. Henry G. Trout is president.

The firm of Mohr & Bates, Marshailtown, Iowa, has been organized to operate a local garage and do automobile and general machine repair work, and has equipped a building with machinery suitable for this work. Under the name of Brock-Mohr Trowel Company the same interests manufacture a line of high-grade aluminum trowels for which there is a growing demand.

The Wichita Falls Foundry & Machine Company, Wichita Falls, Texas, has completed its machine shop which is already in operation. Machinery and equipment for the foundry department are on the ground, and will be installed as soon as the building for that portion of the plant is finished, which will be about October 1. The company will also carry a full line of pipe fittings, valves, shafting, journal boxes, shaft couplings, pulleys, belting, packing, &c.

Payson Merrill has been appointed receiver for Julian Scholl & Co., New York, manufacturer of road making machinery, whose factory is at Kingston, N. Y. The liabilities are stated to be \$80,000, and the nominal assets about \$191,000.

Frank G. Hynes, Camden, N. Y., manufacturer of canners' supplies, steam specialties, electric generators, &c., has purchased a site, 30 ft. front, upon which he will erect a new shop which will more than double the capacity of his present plant. It is not likely that much new machinery will be required, as the equipment of the present plant will be moved into the new building, the erection of which is necessitated by increased business. The present shop will be used for storage purposes.

The Eric Foundry Company, Eric, Pa., manufacturer of steam hammers, punches, shears, rolling mill machinery and castings, will probably decide upon plans for rebuilding its plant, which was recently destroyed by fire, as soon as the insurance is adjusted.

Power Plant Equipment.

The Ashcraft Cotton Mills, Florence, Ala., intends to make improvements to its power plant and desires information as to the best course to pursue in increasing the capacity. Until the company is satisfied as to the most economical way to increase the capacity no orders for equipment will be placed.

Under a reorganization recently effected the Vicksburg Street Railway & Lighting Company, Vicksburg, Miss., two companies, the Electric Power Company and the Vicksburg Traction Company, have been formed. The former organization will own and operate the manufacturing plant, while the latter will control and manage the lighting and street railroad systems.

The University of Mississippi will receive bids until July 1 for the construction of a steam power plant to cost about \$35,000. Generators and other machinery will be required. F. G. Proutt, Memphis, Tenn., is engineer.

The Board of Public Works, South Bend, Ind., has asked for an appropriation of \$100,000, which if secured will be devoted to the improvement of the water system and the purchase of additional high duty pumps. A. J. Hammond is city engineer.

Bids will be closed June 19 for the construction of a power house for the Department of Charities and Correction, Pittsburgh, Pa., to cost about \$100,000. John F. Brennan is assistant superintendent of the Bureau of Building Inspection.

The Coleman Fare Box Company has been incorporated at Buffalo, N. Y., with a capitalization of \$500,000 to manufacture a fare collecting device for pay-as-you-enter cars under the patents of J. H. Coleman of Tottenham, Ontario, the rights in which have been acquired. A factory will be established in Buffalo.

The directors are Charles Kuhn, Vernon Cole, Wm. J. Warner and Charles R. Whiting. The company's office is at 934 Prudential Building.

The Brooks plant of the American Locomotive Company at Dunkirk, N. Y., which last year put in foundations for a new power house and condenser building, will soon start construction on the superstructures, which will be one story in hight, of brick and concrete. The power house will be 165 x 192 ft. and the condenser building 115 x 140 ft.

The State Agricultural Experiment Station, Geneva, N. Y., is to be equipped with gas engine, dynamo, switchboard, pole and line connections and motors. Lyman P. Haviland, chairman of the Building Committee, will furnish specifications and receive proposals. Specifications can also be obtained from Franklin B. Ware, State Architect, Albany.

The city of Stockton, Kan., through its City Council, is considering the installation of an electric plant to be owned and operated by the municipality in connection with the established water works plant.

The Poseyville Milling Company, Poseyville, Ind., will build an electric light plant to supply street lights.

The Wenatchee Electric Company, Wenatchee, Wash., expects to construct an extensive power plant on the Icicle River, near Leavenworth the ultimate capacity of which will be about 12,000 hp. The initial installation, however, will provide about 2000 hp. Preliminary surveys for this work have been made.

Foundries.

Some time ago J. W. Hance, formerly treasurer and general manager of the Hance-Brown Casting Company, Columbus Ohio, purchased the plant of the Westerville Foundry & Machine Company at Westerville, Ohio, and it is now being operated under the name of the J. W. Hance Foundry Company, manageturing gray iron castings, with a capacity of about eight tons per day.

The Lorenna Foundry Company, Bridgeport, Pa., whose plant was recently damaged by fire, will not need any new machinery at the present time.

Fires.

The extensive plant of the American & British Mfg. Company, Providence, R. I., was destroyed by fire June 13, the loss being about \$100,000.

The plant of the American Malleable Company, Bloomfield, N. J., was damaged \$25,000 by fire June 14.

The plant of the Bath Iron Works, Bath, Me., was damaged \$90,000 by fire June 13, the boiler and coppersmith shops and storage house being burned.

The Dickson Car Wheel Company's plant at Houston, Texas, was burned June 6, the loss being placed at \$100,000.

The plant of the American Seeding Machine Company at Louisville, Ky., was burned June 7. The loss is about \$30,000.

The plant and coal tipple of the Royal Coal Mines at Argentine, near Butler, I'a., were destroyed by an explosion of dynamite June 16, the loss being about \$20,000.

Miscellaneous.

The Thomas W. Irwin Mfg. Company, Pittsburg, Pa., is completing work on a contract calling for about 30,000 sq. ft. of structural skylight for the Cuyahoga plant of the American Steel & Wire Company, Cleveland, and has recently finished work on the structural skylight for Dock No. 2 of the Pennsylvania Railroad Company, Cleveland. The company also has important contracts for skylights for the Eric City Iron Works, Eric, Pa., on which erection will shortly commence and for the Titusville Iron Company, Titusville, Pa., which material is now being shipped. Late orders received include the Ritter Dental Mfg. Company, Rochester, N. Y., 14,000 sq. ft. of No. 22 galvanized Carnegie bar, and McClintic-Marshall Construction Company's plant at Rankin, Pa.

The United States Radiator Company, Dunkirk, N. Y., has increased the capital stock from \$300,000 to \$400,000 to provide for the enlargement of its business.

Ambrose Petry, Detroit, Mich., and associates have secured a franchise at Newcastle, Ind., for an artificial gas plant, estimated to cost \$40,000. They have acquired the stock of the Newcastle Light, Heat & Power Company.

The Western United Gas & Electric Company, Aurora, Ill., has acquired a property along the drainage canal at Joliet upon which to erect a new gas plant. Plans for its construction are now under consideration and while nothing has been definitely decided on it is probable that something will be done in the near future.

The recent statement in these columns that B. H. Lawter, superintendent of the Safety Shredder Company. New Castle. Ind., had patented a new engine for automobiles and would erect a building for the manufacture of automobiles is incorrect. Mr. Lawter's invention covers an improvement in the transmission system which can change from faster to slower without disengaging the engine or letting go of the load.

The New York office of the Hill Clutch Company, Cleveland, Ohio, has been awarded a contract by the Isthmian Canal Commission for two friction clutch rope sheaves, 91 4n. diameter, grooved for ten 1½-in, ropes. It is understood that these rope sheaves are to be installed in one of the crushing plants used in connection with the construction of the Panama Canal.

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., reports decided increase in the sales of its White Star oil filters and continuous oiling systems. A number of oiling systems have been installed in the various plants of the Carnegle Steel Company in the past and two more installations have just been completed at the Carrie Furnace, Rankin, Pa. The following is a partial list of other sales and recent installations: Republic Iron & Steel Company, Raimond, Ala.; American Iron & Steel Mfg. Company, Lebanon, Pa.; Shawinigan Water & Power Company, Montreal, Canada; Memphis Coid Storage & Warehouse Company, Memphis, Tenn.; Philadelphia & Reading Railroad, Rutherford, N. J.; Monongahela River Consolidated Coal & Coke Company, Pittsburgh, Pa.; New River Collieries Company, Thurmond, W. Va.; Liberty Mills, Nashville, Tenn.; General Fire Extinguisher Company, Warren, Ohio; Austin Biscuit Company, Boston, Mass.; Ridgway Pure Ice Company, Ridgway, Pa.; Hastings Table Company, Hastings, Mich.

John F. Robertson, for many years secretary and treasurer of the A. W. Cadman Mfg. Company, and H. A. Statenfield, formerly in the sales department of James Bonar & Co., have established themselves under the name of Statenfield & Robertson, at 621 Park Building, Pittsburgh, where they will deal in steam specialties, gravity olling systems and supplies. Both have had long experience in this line, and will represent the following: Warren Webster & Co., water heaters and purifiers; Bridgeport Metallic Packing Company, packing; Hoyt's Metal Company, babbit metals; Metalle Valve Company, Kinghorn patent metallic pump valves; Anti-Selenite Company, carbon cleaning compound for automobile cylinders; Bohm Metallic Packing Company, fibrous babbit metal packing, and Robertson's patent blow off valves.

The Wisconsin State Capitol Commission has awarded contracts for pumps for the new State House at Madison and for hardware for the west wing. The contract for the hardware was awarded to the Kiefer-Haessler Hardware Company, Milwaukee, representing the Russell-Irwin Company of New Britain, Conn., for \$4000. The contract for steam pumps was awarded to the Fred Prescott Steam Pump Company of Milwaukee for about \$7000, the price for the general service pumps being \$1380 and for the electric fire service pumps \$5580.

A large part of the main building of the plant of the Standard Chain Company, Pittsburgh, Pa., at Sarnia, Ont., was blown down by a cyclone last week. No damage was done to the power house and very little to the machinery equipment.

Trade Publications.

Export Selling System.—C. I. F. Company, 11 Broadway, New York. Pamphlet describing problems of export trade, explaining the company's method of handling export business, which connects the consumer directly with the manufacturer. The function of the company and its purpose and aims were explained in *The Iron Age* May 9, 1907.

Machine Tools.—Garvin Machine Company, Spring and Varick streets, New York. Circular No. 72. Consists of a number of leaflets illustrating Garvin milling machines, screw machines, cutter grinding machines, bench grinders, die slotters, &c. Also a leaflet devoted to second-hand machine tools and a circular calling attention to the company's catalogue.

Heavy Duty Engines.—Allis-Chalmers Company, Milwaukee, Wis. Bulletin 1505. Devoted to the company's line of Corliss engines and calls particular attention to the valve gear, which has a new steel detaching device which it claims does not show excessive wear in prolonged operation. Another feature is the safety stop, consisting of blocks of steel on the cut-off cams which come into position and shut off the steam if the governor belt breaks.

Jaw Crushers.—Allis-Chalmers Company, Milwaukee, Wis. Bulletin 1429. Describes the company's line of jaw crushers, explaining their adaptability as crushers when initial expenditure is a factor of importance and when a small machine with a large receiving opening is required and great capacity is nonessential.

Positive Blowers.—Piqua Blower Company, Piqua, Ohio. Circulars. Show several types of the company's positive blowers for smeiting furnaces, oil burning furnaces, &c. A blower attached to direct current motor is shown in one of the circulars which it is claimed is particularly adaptable for foundry use.

Incandescent Lamps.—General Electric Company, Schenectady, N. Y. Two bulletins. No. 4566 shows new type of tantalum lamps, which are rated for 40, 50 and 80 Watts, to replace the 44-Watt lamp. An interesting table is given showing the saving secured for 750 hr. of service at various loads per kilowatt-hour by use of the new sizes. No. 4571, superseding No. 4505, describes the tungsten lamp for street series lighting.

Brass Specialties.—Midland Brass Works, Fort Worth, Texas. Catalogue C. Gives illustrations and price-lists of the

company's line of brass specialties and engineers' supplies, which include water cocks, brass cylinders, tank nipples, stuffing box heads, flange pipe holders, force pumps, couplings and engine room supplies.

Portland Cement.—Edison Portland Cement Company, New Village, N. J. Catalogue, 8 x 11 in., 64 pages. Describes the manner in which the Edison cement is made, concerning which mention was made in The Iron Age May 21, 1908, in connection with an excursion of the Brooklyn Engineers' Club to the plant. The catalogue also gives views of the plant, which was described in complete detail in The Iron Age December 24, 1903, and shows a number of buildings constructed with Edison cement. It also illustrates some concrete dam work and pipe lines in which the cement was utilized, and contains as a frontispiece an excellent photograph of Thomas A. Edison.

An Indiana Coal Mining and Electric Power Project.—The People's Light & Heat Company, Indianapolis, Ind., has increased its capital stock from \$50,000 to \$1,-000,000, under reorganization plans, by which the property comes into the hands of a new company of the same name, headed by Frank M. Fauvre, president, and Paul H. White, secretary and general manager. The new company has acquired the coal mines of the Fauvre Coal Company in Vigo County. It is proposed to erect there a central power plant and to distribute electricity to cities and towns of central and western Indiana and eastern Illinois. Factories in cities as far removed as Chicago, St. Louis and Louisville can be reached and supplied, the promoters say. It is proposed to begin with 5000 hp. delivered on a line to run through Terre Haute, Brazil, Greencastle, Danville and Plainfield to Indianapolis. Coal will be dumped from the mine cars into hoppers of gas producers, making gas to operate gas engines, which, in turn, will drive the electric generators. It is believed that power can be furnished to manufacturers at 10 to 50 per cent. below the present steam cost. The company has options on other large coal areas in different parts of Indiana.

The returns from the Scotch shipyards for May represent a very depressed condition. In that month the shipyards turned out only 14,290 tons. The Clyde proportion of that was 10,770 tons in 25 vessels, as against 43,670 tons in April and 62,240 tons in May of last year. The Clyde output for the five months ending with May has been 114,520 tons, as against 242,390 tons in the corresponding portion of last year. The Forth output for the five months was only 5780 tons, that of the Tay 19,900 tons, and that of the Dee 3578 tons. No vessel at all was launched on the Forth in May. The contracts booked during May consisted only of two dredges and two ocean steamers—not 10,000 tons in all.

The London Telegraph states that the British Government will start in September to build at Portsmouth a battleship still larger than any so far contemplated. It probably will be of 21,000 tons, will cost £2,250,000, and is intended to be completed for sea in 18 months after the keel is laid. It will have two novel and important features. Instead of 12-in. guns, which are now the largest guns used in the British fleet, it will mount weapons of the new 13.5-in. type, which for some time have been the subject of experiment. The other feature, the Telegraph understands, will be equipment with gas engines, by using which no smoke will be made and therefore the new ship will have no funnels.

The Cleveland Chamber of Industry has started an employment day movement, in which it asks the co-operation of the business men of the city and northern Ohio. July 1 is designated as employment day, and business men are urged to employ on that day and thereafter all the men their business will warrant, to send out traveling salesmen, and to take every means possible to make the wheels of business move more rapidly. A number of other organizations have been asked to take part in the movement.

Shipments of finished material by the Westinghouse Electric & Mfg. Company, East Pittsburgh, in the month of May amounted to \$2,250,000, an increase of nearly \$700,000 over April.

The Iron and Metal Trades

The consensus of opinion from all the leading markets throughout the country is that the reductions in the prices of Finished Iron and Steel made last week have done little to stimulate buying. The exception is in Steel Bars, in which a considerable tonnage has been placed. From Pittsburgh comes the report that the three leading interests of the district have booked about 250,000 tons with agricultural implement makers, a considerable part, however, prior to the announcement of the reduction. It must be considered, in connection with the agricultural implement requirements, that quite a large tonnage of unspecified contracts was carried over from the contract year just ending.

The reduction in the price of Steel Billets has not led to any placing of new orders as yet.

There has been a fair movement of Pig Iron in the Chicago District, from which emanate reports of a sale of 40,000 tons by a Southern furnace company to a large local manufacturing interest. Along the seaboard there have been some sales of Foundry, Forge and Basic Irons, but the consumers now seem fairly satisfied while there is still some pressure to sell.

Apparently there is a modest increase in the melt, while Steel makers report that their capacity is slightly better engaged, the percentage now coming close to 50. It is probable, however, that quite a number of manufacturing plants will close down in July for a longer period than usual.

The Sheet and Tin Plate makers held a meeting at Pittsburgh and decided to make an effort to maintain prices, or, in other words, not to concede to the buyers the reduction of \$2 per ton just made in Sheet and Tin Plate Bars.

The sellers of Lake ore have formally announced the reduction of 50 cents per ton. The Pig Iron makers state that this is not likely to lead to a corresponding reduction in the metal because the decline in Pig Iron during the past few months has more than discounted any lowering in the price of raw material.

In the Chicago District some strength has developed in Old Material, as the result of quite heavy buying by the mills of Rerolling Rails, estimated at 10,000 tons, and of Heavy Melting Scrap by steel founders.

In Steel Rails the only transaction reported is the sale of 8000 tons to the Missouri & Northern Arkansas Railroad.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italies.

At date, one week, one month and one year previous.

At date, one week, one mont	h and	one year	r previo	ous.
J	une17.	June10.	May20.	June19,
PIG IRON, Per Gress Ton:	1908.		1908.	
Foundry No. 2, Standard, Phila-				
delphia		\$16.50	\$16.75	\$24.50
Foundry No. 2, Southern, Cincin-	910.00	610.00	610.10	Q22.00
nati	15 95	15.25	14.75	23.75
Foundry No. 2, Local, Chicago		17.25	17.25	26.00
	16.90	16.90	16.90	24.15
Gray Forge, Pittsburgh	14.90	14.90	14.90	23.15
Lake Superior Charcoal, Chicago	20.00	20.00	20.00	27.50
BILLETS, &c., Per Gross Ton :				
Bessemer Billets, Pittsburgh	25.00	25.00	28.00	29.50
Forging Billets, Pittsburgh				
	27.00	27.00	30.00	
Open Hearth Billets, Phila	26.20	26.20	29.20	32.50
Wire Rods, Pittsburgh	33.00		35.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton	:			
		10.05	10.00	10.00
Steel Rails, Melting, Chicago		12.25	12.00	19.00
Steel Rails, Melting, Phila		13.00	12.75	20.00
Iron Rails, Chicago		15.50	14.75	24.50
Iron Rails. Philadelphia	18,00	18.00	17.00	27.50
Car Wheels, Chicago	13.00	13.00	13.00	25.50
Car Wheels, Philadelphia	13.50	14.00	14.00	25.50
Heavy Steel Scrap, Pittsburgh	13.25	13.00	12.75	18.25
Heavy Steel Scrap, Chicago		11.50	10.50	16.50
Heavy Steel Scrap, Philadelphia		13.00	12.75	18.75
		20100	2200	-0110
FINISHED IRON AND STEEL,				
Per Pound:	Cents	. Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	1.40	1.40	1.45	1.8314
Common Iron Bars, Chicago	1.50	1.50	1.65	1.78
Common Iron Bars, Pittsburgh.	1.50	1.40	1.50	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.76	1.86
Steel Bars, Pittsburgh	1.40	1.40	1.60	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.86	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.70	1.70
Beams, Tidewater, New York	1.76	1.76	1.86	1.86
Beams, Pittsburgh	1.60	1.60	1.70	1.70
Angles, Tidewater, New York	1.76	1.76	1.86	1.86
Angles, Pittsburgh	1.60	1.60	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.55	1.55	1.90
Skelp, Sheared Steel, Pittsburgh.	1.50	1.65	1.65	1.90
SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	1.95	1.95	2.05	2.00
Cut Nails, Pittsburgh	1.75	1.80	1.90	2.05
Barb Wire, Galv., Pittsburgh	2.40	2.50	2.50	2.45
				W. XU
METALS, Per Pound:				
	Cents.		Cents.	Cents.
Lake Conner New York	Cents.	Cents.	Cents.	
Lake Copper, New York	Cents.	Cents.	Cents. 13.00	23.75
Electrolytic Copper, New York.	Cents. 13.00 12.87	Cents. 13.00 4 12.75	Cents. 13.00 12.871	23.75 22.50
Electrolytic Copper, New York. Spelter, New York.	Cents. 13.00 12.874 4.575	Cents. 13.00 4 12.75 4 4.574	Cents. 13.00 12.871 4.60	23.75 22.50 6.40
Electrolytic Copper, New York. Spelter, New York Spelter, St. Louis	Cents. 13.00 12.871 4.571 4.40	Cents. 13.00 ½ 12.75 ½ 4.57½ 4.42½	Cents. 13.00 12.871 4.60 4.50	23.75 22.50 6.40 6.35
Electrolytic Copper, New York. Spelter, New York. Spelter, St. Louis. Lead, New York.	Cents. 13.00 12.871 4.571 4.40 4.50	Cents. 13.00 4 12.75 4 4.574 4.424 4.50	Cents. 13.00 12.871 4.60 4.50 4.25	23.75 22.50 6.40 6.35 5.75
Electrolytic Copper, New York. Spelter, New York. Spelter, St. Louis. Lead, New York. Lead, St. Louis.	Cents. 13.00 12.871 4.573 4.40 4.50 4.40	13.00 4 12.75 4 4.574 4.424 4.50 4.35	Cents. 13.00 12.873 4.60 4.50 4.25 4.123	23.75 ½ 22.50 6.40 6.35 5.75 ½ 5.65
Electrolytic Copper, New York. Spelter, New York. Spelter, St. Louis. Lead, New York. Lead, St. Louis. Tin, New York.	Cents. 13.00 12.871 4.573 4.40 4.40 28.00	Cents. 13.00 4 12.75 4 4.574 4.424 4.50 4.35 28.25	Cents. 13.00 12.871 4 4.60 4.50 4.25 4.121 30.30	23.75 ½ 22.50 6.40 6.35 5.75 ½ 5.65 43.25
Electrolytic Copper, New York. Spelter, New York. Spelter, St. Louis. Lead, New York. Lead, St. Louis. Tin, New York. Antimony, Hallett, New York.	Cents. 13.00 12.871 4.573 4.40 4.30 4.40 28.00 8.50	Cents. 13.00 4 12.75 4 4.57 4 4.50 4 4.35 28.25 8.50	Cents. 13.00 12.871 4.60 4.50 4.25 4.121 30.30 8.50	23.75 ½ 22.50 6.40 6.35 5.75 ½ 5.65 43.25 12.00
Electrolytic Copper, New York. Spelter, New York. Spelter St. Louis. Lead, New York. Lead, St. Louis. Tin, New York. Antimony, Hallett, New York. Nickel, New York.	Cents. 13.00 12.871 4.573 4.40 4.50 4.40 28.00 8.50 45.00	Cents. 13.00 ½ 12.75 ½ 4.57½ 4.42½ 4.50 4.35 28.25 8.50 45.00	Cents. 13.00 12.87\(\) 2 4.60 4.50 4.25 4.12\(\) 30.30 8.50 45.00	23.75 ½ 22.50 6.40 6.35 5.75 ½ 5.65 43.25 12.00 45.00
Electrolytic Copper, New York. Spelter, New York. Spelter, St. Louis. Lead, New York. Lead, St. Louis. Tin, New York. Antimony, Hallett, New York.	Cents. 13.00 12.871 4.573 4.40 4.30 4.40 28.00 8.50	Cents. 13.00 4 12.75 4 4.57 4 4.50 4 4.35 28.25 8.50	Cents. 13.00 12.871 4.60 4.50 4.25 4.121 30.30 8.50	23.75 ½ 22.50 6.40 6.35 5.75 ½ 5.65 43.25 12.00

Chicago.

FISHER BUILDING, June 17, 1908.—(By Telegraph.)

The formal announcement made last week of a revision of Finished Material prices was received with apathetic indifference by the trade, and no signs of interest promising acceptance of the new schedules as a permanent level of values have developed. In fact, the net result up to date seems to be an accentuation of distrust in the permanency of the newly established prices, as well as impaired confidence in the cohesiveness of forces acting to support them. In any event, it is quite evident that instead of showing increased activity the market for the past week has been extremely quiet. The spurt of buying which followed immediately upon the reduction in Steel and Iron Bars was short lived, and but small additions have been made to the first purchases. Implement makers are apparently in no hurry to close for their coming season's requirements, and are holding off in the hope of a more advantageous market later on. Builders of threshing engines who usually contract for Plates and Tubes at about this time are not as yet actively in the market, the only order of this kind so far reported being one for 500 tons of Plates. An order for 800 tons of Rails, placed by a Western road for early delivery, was secured by the Illinois Steel Company, and an order for 800 tons of high T Rails was taken by the Pennsylvania Steel Company. No change was made in the price of either Standard Section or Light Rails, although the latter are still persistently shaded. Last week's tonnage of Structural Material taken by fabricators was very light, and

the inquiries received were neither numerous nor individually important. The purchase of a considerable tonnage of Rerolling Steel Rails by the mills has resulted in a further price advance, and active buying by dealers of this and other grades of Scrap Material has strengthened the entire market. In view of the fact that there is but little general demand from consumers, present values are without the support that is needed to guarantee permanency. The only finishing mills now in operation at the South Works of the Illinois Steel Company are the Rail mills, both the Structural and Plate mills being shut down. Most of the Bar mills in this vicinity are preparing to shut down the month of July and the prospects are that during that period mill activities will be reduced to a minimum. After receding to an extremely low level, Pig Iron prices have reacted, and are now quite firm, at current quotations. There has, on the whole, been some increase in the melt, but improvement in this respect is only moderate. Long abstinence from buying, however, caused depletion of foundry stocks, so that there is now room for replenishment. Purchases on this account continue to furnish a fair run of orders.

Pig Iron.—While the demand is by no means insistent, it is of a wholesome character and constitutes a moderate tonnage, which represents the conservatively estimated forward requirements and present needs of smaller melters. Last week's sales were composed chiefly of lots ranging from carloads up to a few hundred tons; a notable exception to this rule was found in three or four purchases made by the principal implement interests, which aggregated around 4000 tons, about equally divided between No. 2 Foundry and Malleable Bessemer. The firm establishment of \$12, Birmingham, as a minimum price for Southern Iron, and its ready acceptance by such consumers as are now in the market, have encouraged some of the furnaces to advance to \$12.50; but, in view of the fact that Iron of well-known brands is obtainable at \$12 for delivery through the second half, such advances have no special market significance. The furnaces asking \$12.50 and \$13 for the third and fourth quarters are generally pretty well supplied with third quarter tonnage, and are willing to take the chance of disposing of fourth quarter at the higher price. The Northern furnaces of this district are emphatic in the statements that \$17.50, at furnace, for No. 2 Foundry is now their absolute minimum price. It is noted, however, that Valley Irons are being offered at \$15, at furnace, or \$17.40, Chicago, though no sales at this price are reported. The proportion of Malleable Iron in the tonnage moved is distinctly better, though very little of it is being taken by the railroads. Northern furnace stocks are being steadily reduced, and if the demand continues even at the present rate some stacks will probably be blown in within the next 30 days. The Federal Furnace Company, whose stack has been idle for several months, is arranging to blow it in shortly after July 1. The following prices are for June delivery, f.o.b. Chicago:

Lake Superior Charcoal	\$20.00 to	\$20.50
Northern Coke Foundry, No. 1	18.00 to	18.50
Northern Coke Foundry, No. 2	17.50 to	18.00
Northern Coke Foundry, No. 3	17.00 to	17.50
Month one Costale No. 1		
Northern Scotch, No. 1	18.50 to	19.00
Southern Coke. No. 1	16.85 to	17.35
Southern Coke, No. 2	16.35 to	16.85
Southern Coke, No. 3	15.85 to	16.35
Southern Coke, No. 4	15.35 to	15.85
Southern Coke, No. 1 Soft.	16.85 to	17.35
Southern Coke, No. 2 Soft		
Southern Coke, No. 2 Soit	16.35 to	16.85
Southern Gray Forge	14.35 to	14.85
Southern Mottled	14.10 to	14.60
Malleable Bessemer	17.50 to	18.00
Standard Bessemer	18.40 to	18.90
Jackson Co. and Kentucky Silvery, 6 %	19.90 to	20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to	21.40
Tackson Co and Fantucky Cilmon 10 0		
Jackson Co. and Kentucky Silvery, 10 %	22.90 to	23.40

(By Mail.)

Billets and Rods.—Last week's concessions in the price of Steel have not been reflected in an increased demand. The market remains inactive, with only such incidental orders for Forging Billets coming out as happened to be needed for immediate use. Delivered prices are governed by the same freight absorption arrangement as applied to the former quotation, under which we now quote for Forging Billets, \$28.50, base, Chicago. No stimulation in the demand for Wire Rods is observed, which are selling only in small lots. Revised prices are as follows: Bessemer, \$33; Basic, \$34; Chain, \$33, all at Pittsburgh.

Rails and Track Supplies.—Chief in importance among last week's transactions in Rails was the placing of an order for 8000 tons by the Missouri & Northern Arkansas Railroad with the Illinois Steel Company. This business is especially desirable since early deliveries are required, specifications being furnished for shipments to begin in July and extending through August and September. An order for 800 tons of high T Rails was also included in last week's business; this was taken by the Pennsylvania Steel Company. Very little new business in Spikes, Bolts and Track Supplies was entered, and no Light Rail tonnage of importance has been booked. Rails were not included in the revision of prices made last week, but Track Bolts are a little easier and quotations on them are revised. Prices named on Light Rails continue to represent only a nominal level, as compe-

tition from rerolling mills is still effective in compelling concessions of \$3 a ton or more from regular quotations. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$28; 20-lb., \$29; 16-lb., \$30; 12-lb., \$31. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—Fabricators report a very light week, in which but few contracts were closed, and such as were taken were uniformly of small tonnage. As far as can be ascertained, not more than 1000 or 1200 tons was included in the week's transactions, the largest of which was 526 tons for the Tacoma, Wash., post office, which was taken by the American Bridge Company. Bids are in on a few small bridges and building structures, among which are 600 tons for the Old Men's Home, Chicago; 1900 tons for the B. A. Eckhart warehouse, Chicago, and about 400 tons of railroad bridge material for the Lake Superior & Ishpeming Railway, contracts for which will probably be let this week. It was expected that plans for the new Chicago City Hall would be distributed last week among the fabricators for estimates, but they have not yet been furnished. The reduction announced last week of \$2 a ton on Structural Material has failed to develop renewed interest among buyers. The general feeling is that this reduction has no special significance, since it is generally believed that it has been more than anticipated by the prices that have for some time been offered on fabricated work. Prices are herewith revised and are quoted from store at 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.78c., in addition to the usual extras.

Plates.—An order of 500 tons of Plates, placed by a builder of threshing engine boilers and tanks with the principal interest, is only noteworthy because of the extreme scarcity of Plate orders. The general run of business is made up of special requirements, the total tonnage of which is exceedingly small. No important inquiries have been received in response to the new schedule of prices based upon a recent reduction of \$2 per ton. Revising prices, we quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—The quietness of demand for Sheets has, if anything, been more pronounced within the last week or two. Buyers are rigidly adhering to hand to mouth purchases, and the demand upon warehouse stocks is too moderate to call for frequent replenishment orders. In view of a reduction made early in the year. Sheet prices were not included in last week's revision of Finished Materials. There is not enough business moving to test the market adequately, which is regarded as fairly firm under present conditions. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.69c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Practically all of the business entered as a result of the recent reduction in Steel Bars was booked immediately after the announcement of the new price. As compared with the total average requirements of the implement makers, the contracts closed are disappointing, both in number and volume. In estimating these requirements it must be borne in mind that there is yet a considerable tonnage of unspecified contracts from implement makers which will be added to new orders. Specifications on both Steel and Iron Bars have been offered a little more freely in the past week, as a result of which nearly all of the mills in the district have been started up for temporary runs. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra

Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—The two point reduction made last week in Pipe discounts has not resulted in a decided increase of business, but some improvement is nevertheless observed. It is significant, however, that buyers continue to order sparingly for actual needs, and manifest no disposition to increase stocks. The demand from local jobbers' stocks is quite moderate. Store prices have been reduced in about corresponding ratio with mill prices. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Balck Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—Builders of threshing engine boilers usually begin looking after their season's requirements at this time, and a few inquiries from such sources have been received A few desultory orders for Merchant Tubes are coming out, but they comprise only such small lots as are actually needed for work in hand. Prices are unchanged, and mill quotations for future delivery, on the base sizes, are as follows: 2\% to 5 in., in carload lots. Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2\% in, and smaller, and lengths over 18 ft., and 2\% in, and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

Steel.	Iron.	Seamless.
1 to 11/2 in	35	35
134 to 214 in	35	35
2½ in	35	35
234 to 5 in	4716	471/2
6 ln. and larger	35	//

Merchant Steel.—Inquiries have been somewhat more numerous, but the orders growing out of them are hardly what was expected, in view of the recent revision of prices. Some of the implement makers have come in for a moderate tonnage, but in the main buying is restricted to the necessities of immediate demand. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish up to 1½ x ½ in., 1.73c.; base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1½ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7½c. to Sc., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. in less than car lots, base territory delivery.

Cast Iron Pipe.—At a letting held last week at Sheridan, Wyo., for 3000 tons, all bids were rejected and new offers will be asked on revised specifications, which will be changed to suit the requirements of a main to bring the water supply from the mountains. Contracts closed during the week were comprised of small lots, of which there were a fair number. Lettings to be held in the near future include Covington, Ky., 700 tons of 20-in. Pipe, and Berwyn, Ill., 1000 tons. Besides these there are several of smaller tonnage, from various municipalities. It is noted that public utility bonds, especially those of the smaller cities, are being readily absorbed, and in view of the stiffening of Pig Iron prices a more active demand for Pipe is anticipated. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., \$27; 6 to 12 in., \$26; 16-in. and up, \$25; with \$1 extra for Gas Pipe.

Metals,—General improvement of the industrial situation has not progressed far enough to change the character of orders, which continue to represent present needs of consumers. There has been a slight increase in the number of carload orders for Copper in the past week which encourages the belief that manufacturers are securing more new business. Lead continues firm with an upward tendency, and is perhaps the most active item in the list. Old Metals are in somewhat better demand, though the improvement is not particularly pronounced. We quote as follows: Casting Copper, 13¼c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 32c.; small lots, 32½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.95c. to 5.05c., for 50-ton lots; in car lots, 2½c.; and other grades, 9¾c. to 10¼c.; Sheet Zinc is \$7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10½c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

Old Material.—A degree of strength, quite out of line

Old Material.—A degree of strength, quite out of line with general market conditions, has developed in Scrap materials. This is attributed to buying by dealers for the covering of short sales. Except in Rerolling Steel Rails and

Heavy Melting Steel, there have been no notable purchases by the consuming interests, so that the large tonnages recently offered by the railroads have been taken by dealers by whom they are held. Nearly all of the local mills using Rerolling Rails have recently bought round lots and are believed to have accumulated enough of such material to meet their needs for some time in advance, at the present rate of consumption. It is estimated that over 10,000 tons have been taken by these interests in the past two weeks. The same is true of Heavy Melting Steel which was bought at what are regarded as bargain prices for future use by the large Steel foundries. Dealers seem to be impressed with the belief that the railroads have unloaded a large part of their collected tonnage, and are of the opinion that offerings from them will be comparatively small for the next 60 days at least. Among the sales reported were 100 tons of Iron Car Axles, at \$17.50; 300 tons Railroad Malleable, at \$11.75; 2500 tons Rerolling Steel Rails, at \$15. In explanation of the present price level, as represented by this week's quotations, it may be said that users regard them as more or less artificial; but at the same time no material concessions are obtainable on actual requirements to be placed. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	\$15.50 to	\$16.00
Old Steel Rails, rerolling	14.25 0	0 14.75
Old Steel Rails, less than 3 ft	13.00 t	0 13.50
Relaying Rails, standard sections, sub-		
ject to inspection	19.00 t	20.00
Old Car Wheels	13.00 to	0 13.50
Heavy Melting Steel Scrap	12.00 t	0 12.50
Frogs. Switches and Guards, cut apart.	12.75	0 13.25
Mixed Steel	9.50 t	0 10.00

The following quotations are per net ton:

Iron Fish Plates	\$14.50 to	\$15.00
Iron Car Axles	17.00 to	17.50
Steel Car Axles	15.50 to	16.00
No. 1 Railroad Wrought		12.75
No. 2 Railroad Wrought	11.25 to	11.75
	12.00 to	12.50
Railway Springs	13.00 to	13.50
Locomotive Tires, smooth		10.50
No. 1 Dealers' Forge	10.00 to	
Mixed Busheling	7.00 to	7.50
Iren Axle Turnings	5.75 to	6.25
Soft Steel Axle Turnings	5.75 to	6.25
Machine Shop Turnings	5.50 to	6.00
Cast Borings	5.00 to	5.50
Mixed Borings, &c	5.00 to	5.50
	6.50 to	7.00
No. 1 Mill	5.50 to	6.00
No. 2 Mill.	7.75 to	8.25
No. 1 Boilers, cut to Sheets and Rings.		12.75
No. 1 Cast Scrap	12.25 to	
Stove Plate and Light Cast Scrap	10.25 to	10.75
Railroad Malleable	11.25 to	11.75
Agricultural Maleable	10.25 to	10.75
Pipes and Flues	8.50 to	9.00
Tipes and Fraces		

Pickands, Brown & Co., Chicago, have been appointed exclusive selling agents in Chicago territory for the product of the new furnace of the Jackson Iron & Steel Company, Jackson, Ohio. Under the brand of Jisco, this furnace will turn out High Silicon Iron and will have a capacity of from 75 to 100 tons per day. It is expected that it will be ready to go into blast some time in August or September.

San Francisco.

SAN FRANCISCO, CAL., June 10, 1908.

Business in general is fair, with the volume of building work gradually increasing. The jobbers in Iron, Steel and Merchant Pipe are more or less upset by the news of reductions in Steel products in the East, which means a general readjustment of Pacific Coast prices in those lines. Fortunately for the local jobbers, stocks are not large, as a rule, and it will not take long for them to adapt themselves to the changed conditions. The trade is awaiting definite information as 10 the contemplated changes in the Pacific Coast differentials on Structural Steel, Plates, &c., resulting from the drop in Eastern prices. Some of the dealers think buying will be stimulated, while others say that the jobbers will not buy much, even at lower prices, unless they can see a better outlook for future sales of Steel products. Things are still looking up in the mining districts, and better orders are coming in, though spasmodically, for pumps, machinery, pipe and repair parts from some districts. More business of the same kind is earnestly desired by local manufacturers and engineering works. The recent revival of activity in the oil regions of California is bringing in more business in the lines of pipe, fittings and nearly everything that is required around the oil wells. This is one of the hopeful features of the present situation, but there is still room for more improvement. In May 598 building permits, representing a total valuation of \$2,709,084, were granted in San Francisco. This was a very slight increase, as compared with the month of April. In Los Angeles during the month of \$830,320. Collections are fair.

Structural Materials.—The tonnage of Structural Steel contracted for during the past two weeks has not been large, but there are some inquiries. The local concerns dealing in fabricated Steel are doing some small work. There has been an increase in the demand for Steel Bars used in the

erection of reinforced concrete buildings. Quite a number of these structures are under way in this city and surrounding territory. The Thompson-Starrett Company has taken a contract, amounting to \$183,000, for the erection of a Class A building of three stories and a basement for Hyman Bros. on the corner of O'Farrell and Stockton streets. Building permits have been applied for for a 10-story Class A building on Market street for the Academy of Sciences, costing \$290,000, and for Steel and brick hospital buildings for the Southern Pacific Company, costing \$265,000. Cotton Bros., who have a contract for a bridge across the Sacramento River, have ordered 325 tons of Structural Steel from the American Bridge Company. Dyer Bros. of San Francisco will furnish 325 tons of Structural Steel-for the United Railroads.

Pig Iron.—No improvement in the market has been noted, although stocks have been reduced somewhat recently. No receipts of Pig Iron by sea have been reported for several weeks, either from Great Britain or China. There is more inquiry among the local foundries and engineering works, but not much increase in the actual demand for Iron castings. No. 1 English, No. 1 Scotch and Chinese Pig Iron Ore quoted at about \$28 per ton, ex-yard.

Merchant Pipe.—There is a fair demand for Merchant Pipe, with not a great quantity moving at present. The volume of business has declined since the spurt of two months ago. A drop of 2 per cent, in the discount has just been announced. Discounts on Steel Pipe are about as follows on jobbers' carloads:

	Steel.
	Black. Galv.
1/8 to 1/4 in	.56.5 40.5
% in	.58.5 44.5
½ in	
% to 6 in	
7 to 12 in	. 61.5 46.5
Extra strong, plain ends:	
1/4 to 3/4 in	. 49.5 37.5
1/2 to 4 in	.56.5 44.5
414 to 8 in	52.5 40.5
Double extra strong, plain ends :	
½ to 8 in	. 45.5 34.5

Cast Iron Pipe.—There is more inquiry for Cast Iron Pipe for new municipal water projects and extensions. The United States Cast Iron Pipe & Foundry Company, R. W. Martindale, Pacific Coast manager, was awarded the contract for a quantity of 6-in. Cast Iron Pipe for the Government coaling station, which has been completed at California City. A small quantity of 6-in. Cast Iron Pipe has also been ordered from the same company for the water system at the State Farm at Davis, Cal. The Waterworks Commission has let a contract for installing water and sewer systems at Roswell, N. M., to Glenn & Rich, Webb City, Mo., the total amounting to about \$53,000. The vote on water bonds at the recent city election at Mesa, Ariz., was in favor of them. A proposition is under consideration to lay a Pipe line from Oro Fino to Fort Jones via Greenview, Cal., and supply domestic water at an estimated cost of \$60,000. The People's Water Company purposes to lay larger Cast Iron Pipes in Alameda, on many cross streets, in order to insure a better pressure for fire protection. The market on Cast Iron Pipe is a little firmer on account of the increased demand in the East, and the latest prices, f.o.b. cars, Pacific Coast terminals, are about as follows: 6, 8, 10 and 12 in., \$36; 4-in., \$37.

Oil Well Supplies.—In many of the oil producing districts things are more active than for several years, and there is a good demand for supplies of all kinds. Several new districts are also being prospected. The discovery of traces of crude oil east of Livermore, Cal., is to be followed up by systematic investigation of the district. Leases have been filed in Oakland, where parties have secured the right to sink oil wells and make a careful inquiry to determine whether oil exists in the district in paying quantities. The leases cover an area of several hundred acres, part in Alameda County and part in Contra Costa County. Advices from Santa Maria say that there are indications that the old oil fields will be connected with the new Eastern field, several miles distant, before winter.

Bars.—The local market has not been much perturbed by the further reduction just announced in the price of Steel Bars along with Structural Steel and other Steel products. There has been some price cutting, but buying was not very active. While there is a probability that jobbers will buy a little more freely, the rolling mills of the Pacific Coast producing Bar Iron of good quality will probably continue to keep Bar Iron prices so low as to limit the consumption of Steel Bars to small quantities. The rolling mill of the Judson Mfg. Company, near Oakland, is in operation most of the time. The mill controlled by the Pacific Hardware & Steel Company, San Francisco, runs intermittently, but keeps sufficient stock on hand to control the market here. Pacific Coast prices have been reduced as follows: Steel Bars, 2.20c., base, San Francisco.

The Morton Company, a branch of W. T. Garratt & Co.,

San Francisco, which has been operating its brass manufacturing plant east of Bay Point, Cal., for several months, owns nearly a section of land surrounding its plant, and expects to make considerable additions in the near future. The site of the factory is at the crossing of the Southern Pacific and Santa Fé tracks, has a mile of water frontage, and is traversed by two large oil pipe lines and an electric power line. These features encourage the building up of a manufacturing town.

Pittsburgh.

PARK BUILDING, June 17, 1908 .- (By Telegraph.)

Pig Iron.—While there is a fair amount of inquiry, it is mostly for small lots, large consumers apparently holding off until the Presidential nomination is made, and also until it is demonstrated whether the reduction of 50c. a ton on Iron Ore will bring any lower prices for Pig Iron. This is not likely, however, as the low price at which Pig Iron has been selling for the past two or three months seems to have fully discounted the lower Ore rates. There is some inquiry for Malleable Bessemer and Foundry, but Bessemer and Gray Forge are extremely quiet. We quote Sand Cast Bessemer Iron at \$16 to \$16.25; Malleable Bessemer, \$15.25 to \$15.50; Basic, \$15.25 to \$15.50; No. 2 Foundry, \$15 to \$15.25, and Northern Forge \$14, all f.o.b. Valley furnace. A sale is reported of 1000 tons of Basic at a price equal to about \$15.25, at Valley furnace, and 300 tons of Malleable Bessemer at about \$15.25, at Valley furnace.

Steel.—The reduction in prices has not brought out any new business, but a fair tonnage in Sheet and Tin Bars is being taken out on specifications against contracts. We quote Bessemer and Open Hearth Billets, 3% in. and larger, up to and including 0.25 carbon, \$25; 0.26 to 0.60 carbon, \$1 extra; over 0.60 carbon, \$2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are \$27, f.o.b. Pittsburgh. Forging Billets take \$2 advance over Rolling Billets.

(By Mail.)

The cut of \$4 a ton in the price of Steel Bars has resulted in orders for upward of 250,000 tons being placed for delivery over the 12 months commencing July 1, but so far this is the only product that has shown an improved demand since the reduction in prices was made. Structural Steel, Plates and other finished products, on which prices were reduced \$2 a ton last week, have not responded in demand; but, on the contrary, reports are current that some business in Structural Material and Plates that was pending before the reduction was made is still hung up, prospective buyers believing that the reduction was not large enough and should have been as heavy as in Steel Bars. The national convention in Chicago this week is also having the effect of causing buyers to hold off until the Republican nomination for President has been actually made. Reports are that two or three leading railroads will come in the market about July 1, or shortly after, with some large inquiries for Rails, Cars, Iron and Steel Bars and other material. The local situation continues quiet, the demand for Pig Iron having fallen off considerably since the heavy sales of two or three weeks ago. Some consumers of Pig Iron are evidently waiting until they find out whether the reduction of 50c. a ton in Ore will bring any lower prices for Pig Iron. The demand for Steel Billets and Sheet and Tin Bars has not perceptibly improved since the cut of \$3 a ton in Billets and \$2 a ton in Bars was made, but consumers are taking out a fair tonnage in Bars on contracts, which have been adjusted to meet the lower prices. The actual new tonnage in Finished Iron and Steel placed so far this month shows a slight increase over May. The demand for Furnace and Foundry Coke is reported as a little better, but Scrap continues quiet with prices fairly strong.

Ferromanganese.—The demand has quieted down somewhat, consumers naturally looking for a reduction in prices of Ferro, on account of the lower prices made last week on Steel. We quote foreign 80 per cent. Ferro at \$44, seaboard, for third quarter, and \$45 to \$45.50, seaboard, for delivery over last quarter. We note a sale of about 125 tons of Ferro for delivery over last half of the year, at about \$45, seaboard, or \$46.95, Pittsburgh.

Ferrosilicon.—No sales are reported, and we quote 50 per cent., for July and August delivery, at \$70, Pittsburgh. The market is quiet, and a recent inquiry for about 300 tons has been withdrawn.

Muck Bar.—With no sales of Muck Bar in this market for some time, we quote nominally \$26 a ton, f.o.b. Pittsburgh, for best grades made from all Pig Iron. No settlement of the wage scales for puddling and finishing mills has yet been made, but it is probable the Amalgamated Association will allow a reduction on account of the lower prices for Iron and Steel Bars.

Skelp.—The market is quiet, but a fair amount of specifying is being made on contracts. None of the mills is able

to run full. We have reduced prices to correspond with the lower quotations on Billets, and now quote Grooved Steel Skelp, 1.45c, to 1.50c,; Sheared Steel Skelp, 1.50c, to 1.60c.; Grooved Iron Skelp, 1.60c, to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Rods.-We note a reduction of \$2 a ton in prices of Rods, but there is practically no demand. We now quote Bessemer Rods at \$33; Open Hearth at \$34, and Chain Rods, \$35, f.o.b. Pittsburgh.

Sheets .- A largely attended meeting of the Sheet and Tin Plate interests was held in this city last week, at which James A. Campbell of the Youngstown Sheet & Tube Company was chairman. The situation was gone over carrian, pany was decided by the mills represented to endeavor to maintain prices. It was pointed out that a reduction of \$1 or \$2 a ton would not stimulate the demand, but would only have the effect of causing buyers to hold off. Two or three large mills that were not represented sent letters to the meeting stating they would be guided by the action taken, and that they would co-operate in the matter of maintaining prices if they were reaffirmed. The Sheet mills evidently intend to take advantage of the reduction of \$2 a ton in Sheet Bars, and not give this away to customers, which has been done in the past. It is claimed that, to Sheet mills that Sheet Bars, and not give this away to customers, which has been done in the past. It is claimed that, to Sheet mills that buy their Bars in the open market, present prices on Sheets, based on Bars at \$27 a ton, allow only a fair margin of profit. The demand for Black and Galvanized Sheets has quieted down in the past two weks, and it is estimated that not over 40 per cent. of the Sheet capacity is active at present. Regular prices, which were reaffirmed at the meeting of the independent mills last week, and which are also being firmly held by the leading interest, are as follows: Blue being firmly held by the leading interest, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 25 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store. being firmly held by the leading interest, are as follows: Blue charging the usual advances for small lots from store.

Steel Rails.—No large orders in Standard Sections have yet been placed, but the Carnegie Steel Company booked the past week about 1600 tons of Light Rails, made up of foreign and domestic orders. Nos. 1 and 2 Edgar Thomson Rail mills of the Carnegie Company continue in operation to about 40 per cent. of capacity, while No. 3 mill, on which Light Rails are rolled, is still shut down. Regular quotations on Light Rails, which are shaded \$4 to \$5 a ton to meet competition of mills that regoil Rails, are as follows: meet competition of mills that reroll Rails, are as follows: 25 to 45 lb. Sections, \$28; 20-lb., \$29; 16-lb., \$30, and 12-lb., \$32. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—It is a little too early yet to judge definitely whether the cut of \$2 a ton made in Plates last week will bring out a heavier demand. So-far this has not been the case, actual new orders being placed being for small lots for current needs. We have reduced our prices \$2 a ton, and now quote: Tank Plates, ¾-in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows: price are as follows:

	Extra pe
Gauges lighter than 4-in. to and including 3-16-in.	
Plates on thin edges	\$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00
All sketches (excepting straight taper Plates vary	1.00
ing not more than 4 in. in width at ends, nar-	•
rowest end being not less than 30 in.)	.10
Complete Circles	20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates.	20
Still Bottom Steel	.30
Marine Steel	40
Shell grade of Steel is abandoned	

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

6 in. of Tank, Ship or Bridge quality.

Structural Material.—No large contracts have been placed the past week, and no large tonnage is in sight. The impression is strong that the cut of \$2 a ton in Structural Steel was not enough. The McClintic-Marshall Construction Company is making a large addition to its template shop at Rankin, Pa., and it is reported that a local Steel concern has placed a contract for four small Steel buildings, aggregating about 1000 tons. We have reduced prices \$2 a ton and now quote: Beams and Channels, up to 15 in., 1.60c.; over 15 in., 1.70c.; Angles, 3 x 2 x ½ in. thick, up to 6 x 6 in., 1.60c.; 8 x 8 and 7 x 3½ in., 1.70c.; Zees, 3

in. and larger, 1.60c.; Tees, 3 in. and larger, 1.65c.; Bulb Angles and Deck Beams, 1.90c. Under the Steel Bar card, Angles, Channels and Tees under 3 in. are 1.50c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Tin Plate.—Only a fair amount of new business is being ced, but the Tin Plate concerns have a fair number of placed, but the Tin Plate concerns have a fair number of orders on their books, against which buyers are specifying quite freely. The American Sheet & Tin Plate Company is operating 213 Tin mills, which is about 95 per cent, of its capacity. The three or four leading independent mills, including the Pope Tin Plate Company and McKeesport Tin Plate Company are required to show the same capacity. Plate Company, are running to about the same capacity. A meeting of the independent mills was held in this city last week, at which it was agreed to maintain prices. We quote at \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Practically no new orders are being placed, but fair specifications are coming in against conracts, prices on which have been adjusted to meet the re-cent reduction of \$4 a ton. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extras, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars .- There has been a heavy buying. movement in Steel Bars since the reduction in price, and it is stated that implement makers, wagon builders and other is stated that implement makers, wagon builders and other large consumers have placed upward of 250,000 tons for delivery over the year, beginning July 1. The Carnegie Republic and Jones & Laughlin companies, who are the three leading producers, are credited with having taken about 200,000 tons, while the other 50,000 tons have gone to smaller mills. So far there has not been much movement in the product of Iron Bars, but this may come later. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel .- The recent reduction in the price of Merchant Steel.—The recent reduction in the price of Steel Bars has brought about a readjustment in prices of Merchant Steels, which on nearly all grades are from \$2 to \$4 a ton iower. We note a fairly active demand for Tire Steel, one concern reporting that it has booked orders for close to 1,000 tons in the past week or 10 days. The low prices ruling for Shafting do not stimulate the demand, which is very dull. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off and less than carloads, 52 per cent, off, on which carload for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

Spelter.—Efforts on the part of the smelters to stimulate demand has so far been without avail, and the Spelter market is dull, while prices are weak. We quote prime grades of Western at about 4.30c., East St. Louis, equal to 4.421/2c., Pittsburgh.

Railroad Spikes.—As yet the expected buying movement in Spikes by the railroads has not materialized, and the demand from that direction is very quiet. A fair amount of business is being placed in the smaller sizes. We quote: Standard sizes, 4½ x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh. burgh.

Iron and Steel Scrap.—Aside from a sale of about 500 as of Low Phosphorus Melting Stock, and inquiries from an Eastern Ohio Steel plant for about 1500 tons of Old Material, the market is quiet and prices are only fairly strong. Some consumers expect to close down their plants about July 1 for inventory and repairs and will not take in any Scrap until these have been completed. We quote per gross Scrap until these have been completed. We quote per gross ton, Heavy Steel Scrap, Pittsburgh, Steubenville and Sharon delivery, \$13.25 to \$13.50; Cast Iron Borings, \$7 to \$7.25; No. 1 Railroad Wrought Scrap, \$13.50 to \$13.75; No. 1 Cast, \$14 to \$14.25; Bundled Sheet Scrap, \$9.25 to \$9.50 at shipping point; Sheet Bar Crop Ends, \$17.25 to \$17.50; No. 1 Busheling Scrap, \$12.75 to \$13; No. 2, \$8.75 to \$9; Iron Axles, \$19 to \$19.50; Steel Axles, \$17.50 to \$18; Low Phosphorus Melting Stock, 0.04 and under, \$18; Old Steel Rails, short pieces for melting purposes, \$13.25 to \$13.50; Rerolling Rails, \$14.50 to \$15; Machine Shop Turnings, \$8.25 to \$8.50; Grate Bars, \$12 to \$12.25; Railroad Malleable Scrap, \$11.50 to \$12, all f.o.b. Pittsburgh. We note sales of 100 tons of Pipe and Tank Busheling Scrap at \$13 and 100 tons of Heavy Steel Scrap at \$13.75, f.o.b. Pittsburgh.

Coke.—There are some inquiries for Furnace and Foun-

Coke.—There are some inquiries for Furnace and Foundry Coke for last half of the year, and prices on the whole

seem to be a little firmer. The improvement in the demand for Pig Iron is reflected to a slight extent in Furnace Coke, shipments from the ovens being larger now than for some time. Strictly Connellsville Furnace Coke for prompt shipment is now held at \$1.60, and 72-hr. Foundry at \$2 to \$2.10, at oven. On contracts for last half of the year strictly Connellsville Furnace Coke is held at about \$1.85 and 72-hr. Foundry at about \$2.25, but it is possible that on desirable contracts these prices might be slightly shaded. The output of Coke in the Upper and Lower Connellsville regions last week was 155,846 tons, an increase of nearly 3000 tons over the previous week.

Merchant Pipe.—The reduction of two points, or \$4 a ton, in prices of Iron and Steel Pipe made last week is too recent to demonstrate whether it will result in more active buying. Several of the larger mills advise us that since the reduction in prices was made the demand has gone up, but one or two other mills state that buying has fallen off since the lower prices were made, jobbers evidently expecting still further reductions. We have increased our discounts two points, net discounts on Steel Pipe to the large trade on ¾ to 6 in. now being 76 and 5 per cent. off list. Discounts are now as follows:

w as follows:	Merchant Pipe.	
		Jobbers, carloads, Steel.
		Black. Galv.
1/4 to 1/4 in		67 %1
% in		69 55
1/2 In		71 59
% to 6 in		
		72 57
Extra strong, pla	in ends :	
1/4 to 3/4 in		60 48
½ to 4 in		67 55
		63 51
Double extra stre	ong, plain ends :	
1/4 to 8 in		56 45

Discounts on Genuine Iron Pipe are as follows:

scounts on Genuine	Iron Pipe are as follows:	
	Black.	Galv.
1/4 to 1/4 in		0.0
% in		53
1/2 in		57
% to 6 in		63
		55
Extra strong, pla		
16 to 36 in		46
16 to 4 in		46 53
		49
Double extra stro	ng, plain ends :	
1/4 to 8 in		43

Boiler Tubes.—No change was made in discounts on Boiler Tubes, but there has been more or less cutting in prices for some time. New business is very light. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

	Boiler Tubes.	
		Iron. Steel.
1 to 11/2 in		
1% to 2% in		42 59
21/2 in		47 61
2% to 5 ln		52 65
6 to 13 in		42 59
216 in, and smaller, or	ver 18 ft. long, 10 per	cent, net extra.
2% in and larger ove	r 22 ft long 10 ner co	nt net extra

Philadelphia.

PHILADELPHIA, PA., June 16, 1908.

The leading feature in the week's Iron and Steel markets was the reduction in the prices of some of the lines of finished and semifinished materials. Owing to the circumstances under which the reductions were made, confidence in the stability of prices has been disturbed, and consumers, who in a number of cases are said to be willing to do business, hesitate when it comes to placing orders for any considerable tonnage, preferring to wait a while in order that they may feel sure that the bottom has been reached. In instances the reductions can hardly be termed as such, but are looked upon rather in the nature of readjustments, and some tonnage which was held back pending the decision of the manufacturers regarding the reduction has been placed, but the aggregate amount has not been large. A disturbing feature has also developed in the Pig Iron market, some sellers reducing prices on the Foundry grades in order to secure business. Some furnaces do not seem to be able to resist the temptation to do business at low prices for prompt Iron. so as to enable them, it is said, to get ready money. Most of the business done at the lower prices, however, has been for New England and New York delivery, buyers in this territory not being disposed to buy heavily, even when concessions have been made.

Pig Iron.—While the aggregate tonnage sold the past week has been heavy, there have not been so many large orders placed. There has been pretty good tonnage taken in the Foundry grades, but the individual lots are smaller and largely for prompt shipment. The Steel makers who bought heavily last week have been less active, although there is still some inquiry about. Furnaces in a number of instances have sold more than they are able to make at their present

rate of production, and stocks in some cases have been considerably reduced. The cutting in Foundry Iron prices has been done by a few furnaces who still have considerable stocks, which they are anxious to turn into money, and these interests have not sold extensively in this territory. It has resulted, however, in some other furnaces meeting the quotations, while others still refuse to sell No. 2X Foundry for prompt shipment below \$16.75 to \$17. Sales of No. 2X Foundry for prompt delivery in lots ranging from 50 to several hundred tons have been numerous, while some few of 500 and 1000 tons for delivery in June, July and August are also reported, prices ranging from \$16.50 to \$17, delivered, according to the tonnage and brand. For forward deliveries many brands command an advance of 50c. to 75c. a ton, and quite a tonnage of No. 2X and No. 2 Plain has been sold for shipment in the last quarter, although sellers as a rule discourage forward buying. There have been some fair sales of Virginia Foundry for prompt and forward de-livery, at ruling prices. The bulk of the recent sales has been for Western shipment. The Pipe foundries have bought some fair tonnages of Forge and low grade Foundry, and are still in the market for further tonnages. One lot of 5000 tons of Gray Forge was sold at about \$15, delivered, while another lot of 1000 tons of mixed numbers was sold at about the same figure. Standard Gray Forge has not been in urgent demand, as the Bar mills are still operating on a restricted basis. Nearly all the Steel mills in this territory are understood to have bought all the Basic they want at A sale of 5000 tons, at \$15.25, was reported last week. One or two interests, however, have not yet entered the market, although it is believed that they will make some purchases in the near future. Low Phosphorus Iron has not been active; some inquiries have been before the trade, but buyers have not placed orders for any further heavy ton-nages. Southern Iron is on a firmer basis, and while efforts have been made to get lower prices for considerable tonnages, sellers hold firmly on the basis of \$12 to \$12.50, Birmingham, for No. 2 Foundry. Notwithstanding the shading of prices on some grades, the undertone of the market is strong, Iron is being taken pretty freely by customers, and some of the furnaces have booked as much tonange as they want for deliveries up to October 1. Prices for prompt deliveries in buyers' yards, eastern Pennsylvania, and adjoining territory, range about as follows; for last half shipment, however, sales have been made at an advance of 50c. a ton, while for fourth quarter delivery an advance of \$1 a ton is pretty generally asked:

E	astern	Penn	svl	vs	mi	a.	N	lo.		2	X	F	0	u	nd	ir	V	. 4	81	6.50	to	\$17.00
E	astern	Penn	syl	VE	m	la.	1	No).	6	2	P	18	i	n.				1	6.00	to	16.50
V	irginia.	No	2	X	F	ou	n	dr	V													17.00
																						16.75
G	ray Fo	rge												۰					1	5.00	to	15.50
																						15.50
L	ow Pho	ospho	rus	l															2	1.00	to	21.25

Ferromanganese.—The demand is light. Inquiries for small lots ranging from 25 to 50 tons are reported, but there are few sales. Quotations seem to be on a more even basis, \$45 to \$46, Baltimore, being pretty generally named by sallors

Steel.—The reduction in the price of Steel Billets has not resulted in any increased business. Some few orders, which had been held up pending price adjustment, have been placed, but the aggregate tonnage has been small. Mills in this territory are not actively engaged and customers order what they need for prompt shipment, but show no inclination to contract for forward deliveries. Under the new price arrangement, ordinary Rolling Steel, for delivery in this territory, is quoted at \$26.20, with Forging Steel at \$28.20, subject to the usual extras for high carbons and special sizes.

Plates.—Some moderate sized orders have been placed since prices were reduced. More disposition is shown to enter into contracts, although the large buyers still hesitate. Most of the business placed has been of a miscellaneous character, orders in some cases running up to several hundred tons. Mills, however, do not yet feel any particular benefit from the increased buying, and it will require considerable business to enable them to get up to anything like a normal output. The following range of prices is now quoted for delivery in this territory:

	Carload, carload.
	Cents. Cents.
Tank, Bridge and Boat Steel	
Flange or Boiler Steel	
Commercial Firebox	1.95 2.00
Marine	2.15 2.20
Locomotive Firebox Steel	2.25 2.30
The above are base prices for ¼-in, and ingextras apply:	
3-16-in. thick	
Nos. 7 and 8, B. W. G	
No. 9, B. W. G	
Plates over 100 to 110 in	
Plates over 110 to 115 in	
Plates over 115 to 120 in	
Plates over 120 to 125 in	
Plates over 125 to 130 in	
Plates over 130 in	

Structural Material.—Considerable activity is expected

to result from the cut in the price of Structural Material, but it is too early yet for sellers to note any particular improvement in the demand. Some little urgent business has come out, but the larger propositions will most likely be again figured on, and the lower prices may bring out some which have been held in abeyance. Most of the business of the week has been of a miscellaneous character, the aggregate tonnage, however, being of fair volume. The new schedule of prices ranges from 1.75c. to 1.90c., according to specification.

Sheets.—There is a continued improvement in the demand. Consumers show no disposition to contract for future needs, but rather place orders for quantities required for prompt shipment. Some of the mills in this territory are running full time this week, but are dependent entirely on current orders to maintain that rate of production. Prices are unchanged and for mill shipments range as follows, with a tenth extra for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—The market continues unsettled. The Eastern Bar Iron Association held a meeting in this city last week, but the matter of adjusting prices was deferred. The regular meeting of the association will be held June 18, when this matter will likely be taken up. The demand is light, and sales have mainly been of small lots. Refined Iron Bars can be had considerably under the base price, quotations for delivery in this territory ranging from 1,40c, to 1,45c. Steel Bars are in moderate demand only, the price quoted being 1,55c., delivered, with Rerolled Bars at 1,50c.

Coke.—There has been a little more activity in the demand for Coke. and some small contracts for deliveries in the last half of the year have been made. Foundry Coke continues the most active, there being little demand for Furnace Coke. Foundry Coke is quoted at \$2.25 to \$2.45, at oven, with Furnace Coke at \$1.50 to \$1.75, at oven. For delivery in this territory, the following range of prices is quoted:

Connellsv	ille F	urna	ice	C	ok	e	 					 \$3.65	to	\$3.90
Foundry	Coke.											4.40	to	4.60
Mountain	Furn	ace	Cok	e.				۰		0	0	 3.25	to	3.50
Foundry	Coke.						 					4.00	to	4.20

Old Material.—There is not much improvement in the demand. Consumers are taking small quantities from time to time, but no large sales are reported. The railroads have disposed of a considerable tonnage during the past 10 days, a large share of which was taken by merchants. Prices are fairly steady, and in one or two instances show a slight forward movement. Quotations are largely nominal and range about as follows for deliveries in buyers' yards, eastern Pennsylvania and nearby territory:

No. 1 Steel Scrap and Crops \$13.50 to \$14.00 Low Phosphorus 18.00 to 18.50 Old Steel Axles 18.00 to 18.50 Old Iron Axles 20.00 to 21.00 Old Iron Rails 18.00 to 18.50 Old Gar Wheels 13.50 to 14.00 Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50 Grate Bars 11.75 to 12.25		
Low Phosphorus 18.00 to 18.50 Old Steel Axles 18.00 to 18.50 Old Iron Axles 20.00 to 21.00 Old Iron Rails 18.00 to 18.50 Old Car Wheels 13.50 to 14.00 Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	No. 1 Steel Scrap and Crops \$13.50 to \$	14.00
Old Steel Axles 18.00 to 18.50 Old Iron Axles 20.00 to 21.00 Old Iron Rails 18.00 to 18.50 Old Car Wheels 13.50 to 14.00 Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50		
Old Iron Axles. 20.00 to 21.00 Old Iron Rails. 18.00 to 18.50 Old Car Wheels. 13.50 to 14.00 Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast. 14.00 to 14.50 Rallroad Malleable. 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 No. 1 Forge Fire Scrap. 11.50 to 12.00 No. 2 Light Iron. 9.00 to 10.00 Wrought Turnings. 9.50 to 10.00 Stove Plate. 11.00 to 11.50 Cast Borings. 9.00 to 9.50	Old Steel Axles 18.00 to	18.50
Old Iron Rails 18.00 to 18.50 Old Car Wheels 13.50 to 14.00 Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	Old Iron Axles 20.00 to	21.00
Old Car Wheels 13.50 to 14.00 Choice No. 1 R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	Old Iron Rails	18.50
Choice No. 1 R. R. Wrought 15.50 to 16.00 Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50		14.00
Machinery Cast 14.00 to 14.50 Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	Choice No. 1 R. R. Wrought 15.50 to	16.00
Rallroad Malleable 11.75 to 12.25 Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	Machinery Cast	4.50
Wrought Iron Pipe 12.00 to 12.50 New Bundled Sheets 12.00 to 12.50 No. 1 Forge Fire Scrap 11.50 to 12.00 No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	Railroad Malleable 11.75 to	12.25
New Bundled Sheets. 12.00 to 12.50 No. 1 Forge Fire Scrap. 11.50 to 12.00 No. 2 Light Iron. 9.00 to 10.00 Wrought Turnings. 9.50 to 10.00 Stove Plate. 11.00 to 11.50 Cast Borings. 9.00 to 9.50	Wrought Iron Pipe	12.50
No. 1 Forge Fire Scrap. 11.50 to 12.00 No. 2 Light Iron. 9.00 to 10.00 Wrought Turnings. 9.50 to 10.00 Stove Plate. 11.00 to 11.50 Cast Borings. 9.00 to 9.50	New Bundled Sheets 12.00 to	12.50
No. 2 Light Iron 9.00 to 10.00 Wrought Turnings 9.50 to 10.00 Stove Plate 11.00 to 11.50 Cast Borings 9.00 to 9.50	No. 1 Forge Fire Scrap 11.50 to	12.00
Wrought Turnings. 9.50 to 10.00 Stove Plate. 11.00 to 11.50 Cast Borings. 9.00 to 9.50	No. 2 Light Iron 9.00 to	10.00
Stove Plate	Wrought Turnings 9.50 to	10.00
Cast Borings 9.00 to 9.50	Stove Plate 11.00 to	11.50
Grate Bars 11.75 to 12.25	Cast Borings 9.00 to	
	Grate Bars 11.75 to	2.25

Birmingham.

BIRMINGHAM, ALA., June 15, 1908.

Pig Iron.—The week just ended has been a very quiet one in Pig Iron circles. Melters have apparently covered for actual requirements as far advanced as desired, and recent developments relative to price of Northern Ores and Steel products have had a decided tendency to check speculative negotiations. There is no evidence, however, that the cessation of buying has affected quotations. The business offered is being taken at prices around the established schedule, and notwithstanding the fact that purchasers are indisposed to engage tonnage for advanced delivery, producers aronot solicitous of such engagements. Prohibitive quotations on last quarter deliveries are being adhered to by practically all makers. One interest quotes \$13, Birmingham, for last quarter deliveries, while a smaller one would accept orders covering the last half at \$12.25, although the tonnage available is limited. The principal sale reported during the week was 750 tons of No. 2 Soft, for delivery in August and September at \$12, Birmingham. A lot of 500 tons of Gray Forge for the third quarter recently brought \$10.50 per ton. An inquiry for an additional 500 tons of this grade is pending, as well as an inquiry for 800 to 1000 tons of Nos. 2 and 3 Foundry for shipment over the remainder of the year. Shipments as originally specified are being made against all engagements, and indications are that tonnage is being consumed promptly. The rate of production is to be further increased within the next week or 10 days by two additional stacks. A third stack is undergoing repair, and will probably

be ready for operation within 30 days. The production in the State is now represented by 24 stacks, of which 15 are on Foundry Iron, 7 on Basic Iron and 2 producing Charcoal Iron.

Cast Iron Pipe.—Reports for the week are without transactions of significance. The demand has been principally for small municipalities, and the tonnage engaged was limited, although the aggregate reaches attractive proportions and prices received show a higher average than formerly. The prospects for small orders is encouraging, and a number of inquiries have recently been made for quotations on large tonnages, but no contracts of importance are expected at an early date. It is learned that the proposed letting for Cuban points has been deferred pending arrangement as to finances. The market is generally considered on a firmer basis, but an advance in quotations is not authorized, and we continue to quote Water Pipe as follows, per net ton, f.o.b. cars here: 4-in. to 6-in., \$23; S-in. to 12-in., \$22; over 12-in., average \$21, with \$1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

Old Material.—The condition of the market is very unsatisfactory. Dealers are more hopeful by reason of indications favoring an increased rate of consumption, but the fact that the present schedule of prices apparently offers no inducement to purchasers is a significant one and developments in this connection will be awaited with interest. Quotations as published are being adhered to, and in the case of Cast Scrap an advance is authorized, yet the demand for any grade is hardly sufficient to afford a test of values. We quote as follows, per gross ton, f.o.b. cars here:

Old Iron Rails\$15.00 to \$15.	50
Old Iron Axles 14.00 to 15.	
Old Steel Axles 12.50 to 13.	00
No. 1 Railroad Wrought 12.00 to 12.	50
No. 2 Railroad Wrought 9.00 to 9.	
No. 1 Country Wrought 10.50 to 11.	
No. 2 Country Wrought 9.50 to 10.	
No. 1 Steel 9.50 to 10.	00
No. 1 Machinery 10.00 to 11.	00
Wrought Pipe and Flues 8.50 to 9.	00
	00
Cast Borings 5.00 to 5.	50

St. Louis.

St. Louis, Mo., June 15, 1908.

An interesting feature of the local situation is that the large railroads are doing some buying, and while their purchases are mostly confined to Track Supplies, it is a step in the right direction. The smaller railroads, together with coal and lumber interests, are becoming free buyers of Rails. There is an improved demand for Structural Material, Bars, Plates and high grade Iron. The activity in Pig Iron continues to hold. In Lead the course of the market is toward higher prices, which may not be checked until within the range of importing figures. Manufacturers of Sheet Metal Goods find the market getting bare of stocks. Copper manufacturers report an improvement. A large local engine builder has begun running full. During the week the City Comptroller awarded \$5,000,000 of the \$10,200,000 public improvement bonds. The total bids were six times the aggregate amount of bonds to be sold, and went to local institutions, these having outbid Eastern interests. It is expected that bids will be out for the construction of the Central Public Library between July 1 and 15. The appropriation is \$1,200,000.

Coke.—The market for Coke is stronger, under a steady demand, without any advance in prices. Connellsville Foundry is offered in St. Louis territory at \$2.15 to \$2.50, f.o.b. oven, for all deliveries.

Pig Iron.—Local companies report the receipt of numerous small orders of Pig Iron for shipment over the next three or four months, and the aggregate tonnage is quite satisfactory. The reduction in prices of several finished Steel products thus far has not affected either the demand or prices of Pig Iron. Consumers of Pig Iron realize there was a good margin of profit in Steel products, leaving room for a decline, while the price of Pig Iron had already been reduced. Inquiries are pending amounting to between 4000 and 5000 tons for all grades, delivery over last half of the year.

Structural Material.—Bookings for the week have been moderate, comprising a number of small orders, but no large contracts. The recent reduction will, it is believed, stimulate business.

Bars and Rails.—Since the new list went into effect Bars have met with an active demand, and a satisfactory business is being done. For Light Rails there is still a good inquiry from coal operators, and considerable tonnage is being ordered out. Track Supplies, including Spikes, Bolts, &c., are in excellent demand, some of the large railroads having come into the market.

Metals.—The demand for Metals is improving. A large local company states that for Alloys the month thus far

shows an increase of 30 per cent. Lead for corroding purposes is also in active inquiry.

Old Materials.—As the large mills are not running steadily as yet, the market is featureless, most of the business passing being between dealers. There is, however, a better feeling owing to mills making preparations for operating and there being more business in sight. As for offerings, the Missouri Pacific is out with 600 tons miscellaneous Scrap and the Vandalia with 400 tons Steel Rails. We hear of sales by one local company of 2000 tons Rerolling Rails at \$15.50 per gross ton, and another of 1200 tons Relaying at \$24. Rerolling and Relaying Rails are in demand and are the strength on the entire list. We quote as follows:

Old Iron Rails\$14.25 to \$	14.50
Old Steel Rails, rerolling 13.00 to	13.25
Old Steel Rails, less than 3 ft 12.00 to	12.25
Relaying Rails, standard sections, sub-	
ject to inspection 23.00 to	
Old Car Wheels 12.25 to	
Heavy Melting Steel Scrap 12.00 to	12.25
Frogs, Switches, Guards, cut apart 12.00 to	12.25
Mixed Steel 10.00 to	10.25

Following quotations are per net ton:

Tollowing quotations are per net ton .
Iron Fish Plates
Iron Car Axles
No. 1 Railroad Wrought 11.25 to 11.50
No. 2 Railroad Wrought 10.25 to 10.50
Railway Springs 10.50 to 10.75
Locomotive Tires, smooth 12.00 to 12.50
No. 1 Dealers' Forge 9.00 to 9.50
Mixed Borings, &c 4.25 to 4.50
No. 1 Boilers, cut to Sheets and Rings. 8.00 to 8.50
No. 1 Cast Scrap 12.00 to 12.25
Stove Plate and Light Cast Scrap 9.25 to 9.50
Railroad Malleable 9.50 to 9.75
Agricultural Malleable 8.50 to 8.75
Pipes and Flues 8.00 to 8.25

Cincinnati.

CINCINNATI, OHIO, June 17, 1908.—(By Telegraph.)

Business is in a quiescent state this week. None of the announced price reductions in Finished Material, Ore or anything else seems to have stimulated a sluggish market following the heavy buying of a couple of weeks ago. Sentimentally, however, there is a better feeling, and persistent reports of pressing needs at headquarters of great railroad systems in the matter of urgently needed repairs, and from the agricultural districts of splendid crops imparts hope that there will be a greater consumption of Iron in the comparatively early future. Foundries in this section engaged on small and miscellaneous castings for cash register and similar concerns are running almost up to their normal capacity, but the machine tool markets are still quiet.

Pig Iron.—Prices on the Southern product remain unchanged, and No. 2 Foundry is still quotable at \$12, Birmingham, for the remainder of the year. Figures for 1909 are not obtainable. It is reported here that the Valley Iron makers are now holding firm at \$15, at furnace. There is a wider range in prices of the Hanging Rock product—namely, \$15 to \$16 for the balance of the year. One prominent interest in this district, which is accredited with a stock of something like 12,000 to 15,000 tons of Foundry grades on its yards, is selling at \$15, at furnace. A large Central Ohio car manufacturing concern, which was out last week with an inquiry for about 2000 tons of No. 2 Foundry, equally divided between Northern and Southern, for balance of the year, has postponed negotiations indefinitely. Local foundries practically all covered for their requirements of the half year in the buying movement of late May, but several outside foundries have been in the market recently for quantities ranging from 50 to 250 tons each. It is announced that the large Southern interest which has been booking for one of its stacks, which is to be blown in on Basic soon, has already sold up for the balance of the year. The scarcity of low grades is still marked, and some very good prices have been obtained for prompt shipments of Mottled and Forge and even White Iron, some demand for the latter having developed recently from bell manufacturers and makers of building materials. Eight per cent. Silicons, Ohio Silveries, are firm at \$18.50, at furnace, and some are selling now at that figure. Southern Basic is quotable at about \$12.50, at furnace, and Ohio Malleable at \$15.50. An inquiry is out for 100 tons each of Northern and Southern No. 2 Foundry for early shipment from a Central Indiana melter. For early delivery and balance of the year we quote, f.o.b. Cincinnati, as follows, freight rates being \$3.25 from Birmingham and \$1.20 from the Hanging Rock District, as follows:

			-			9-			-		 -		9	0 20110
Southern	Coke,	No.	1.									\$15.75	to \$	816.25
Southern	Coke,	No.	2.									15.25	to	15.75
Southern	Coke.	No.	3.									14.75	to	15.25
Southern	Coke.	No.	4.									14.25	to	14.75
Southern	Coke,	No.	1	S	oft							15.75	to	16.25
Southern	Coke.	No.	2	80	oft							15.25	to	15.75
Southern	Coke,	Gray	I	O	rg	e .				. 9		13.75	to	14.25
Ohio Silv	erv. 8	per	ce	nt	. 8	Sil	ic	on			 			19.70
Lake Sup	erlor (Coke.	N	0.	1.							16.70	to	17.70
Lake Sup														
Lake Sup														
Standard														
Lake Sur														

(By Mail.)

Coke.—There is a little stiffening in tone of the market, so far as it applies to forward deliveries, but no change is noted in spot business. Some fairly good sized contracting has been done on Foundry Coke for forward shipment for the year, and for six months from July 1, and at a price ranging from \$2.10 to \$2.25, at oven, according to grade. For spot shipment best grades are obtainable at \$2 to \$2.25. Connellsville Furnace brands are bringing \$1.75 to \$1.90, and for forward shipment the price is nearer \$2, as there is a disposition to turn down contracts for forward business at the prevailing "bargain figures." The Cincinnati market depends very largely on the Virginia product, of which Pocahontas Foundry is quotable at \$2 to \$2.25, at oven.

Finished Iron and Steel.—The market is still in a very unsettled condition, which the recently published reductions in prices seems not to have remedied, and if anything have aggravated. Much correspondence is going on between the various factors, and there are already rumors of price slashing. There have been some bargain lots of Bar Iron offered in this market, it is said, but the lots have been so small and the prices so carefully covered that no apprehension is felt; and it is reasonably certain at this writing that the jobbers and store dealers are all maintaining prices, and there is no immediate prospect for any reduction to the small dealer and the small user. One of the opinions expressed by a large factor in the central West, whose keenness of vision and general success in his line of business should lend weight to his utterances, is that the Steel manufacturers should have announced the reduction in force for 60 or 90 days, when contracts could have been made, with the declaration that the price would be restored at the expiration of the time stipulated. As it is, existing contracts have been disturbed, and no new business has come out. There is some fear also that the rumors of labor troubles in July may not be unfounded, and if this be so the stores and jobbers are given another reason to hold firmly on prices in small lots. Orders are filled here at the following prices, which are f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, half extras. Steel Plates, carload lots, 1.75c., base, half extras. Steel Plates, carload lots, 1.75c., base, half extras is mall lots from store, 2.85c., base; small lots from store, 2.10c. Plates, ¼ in. and heavier, carload lots, 1.85c.; small lots from store, 2.60c. No. 14, carload lots, 2.5c.; small lots from store, 2.60c. No. 16, carload lots, 2.5c.; small lots from store, 2.30c. Sheets (Light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carlo

Old Materials.—The local Scrap market has been dull, with no change in prices. There have been some fairly good lots of Heavy Melting Steel Scrap sold, and some special lots of Cast. Dealers express confidence in the situation, and are hopeful of a revival after the work of the Chicago nominating convention is over and attention is turned to manufacturing. Local dealers are still somewhat disturbed by rumors of impending price cutting on the part of overstocked outsiders. The following prices are about representative of the present market, and are f.o.b. Cincinnati:

*		
No. 1 R. R. Wrought, net ton\$	10.50 to	\$11.50
Cast Borings, net ton	4.00 to	5.00
	11.00 to	12.00
Steel Turnings, net ton	5.00 to	6.00
	10.25 to	11.25
Burnt Cast and Wrought, net ton	8.00 to	9.00
	14.50 to	15.50
	13.00 to	14.00
	11.00 to	12.00
	11.00 to	12.00
	22.00 to	
Old Car Wheels, gross ton	12.00 to	
Low Phosphorus Scrap, gross ton	13.00 to	14.00

The Jonathan Bartley Crucible Company, Trenton, N. J., is building a plant along the Pennsylvania Railroad in that city, for the manufacture of plumbago crucibles and plumbago products for foundry use. The factory, which is now under roof, is expected to be the most up to date crucible plant in the country. The main building will have a floor space of over 60,000 sq. ft., and the equipment will include several machines of a special character which will be material factors in crucible making. The plant is expected to be in operation early in August, making deliveries about November 1. The officers of the company are as follows: Lewis Lawton, president; Joseph Crossley, vice-president; A. M. Maddock, treasurer; Lewis H. Lawton, secretary, and Jonathan Bartley, general manager.

Cleveland.

CLEVELAND, OHIO, June 16, 1908.

Iron Ore.-The anticipated reduction of 50c. a ton in the price of Ore was made at a meeting of representatives of leading merchant Ore firms held in this city June 12. The reduction was made on both Bessemer and non-Bessemer Ore, both Old Range and Mesaba. While the Ore men were urged by some of the large Iron and Steel interests to make a reduction, there was a strong feeling against cutting prices, and it is said that the reduction would not have been made had it not been generally reported among the trade that one seller who usually does not take part with the others in making a price agreement was offering Ore at 50c. lower than the established price, although this was denied by the concern in question. It is the general opinion that the new prices will be firmly maintained. Enough time has not elapsed since the price reduction to bring on much of a buying movement, although a number of small lots of Ore have been sold in the past few days. A number of buyers have made inquiries, and it is expected there will be quite an active buying movement in the next three or four weeks, or as soon as consumers have time to figure out their requirements. No action was taken on reducing the price of Siliceous Ore. There have been no inquiries for this Ore as yet. When consumers get ready to buy, the sellers will act individually in fixing prices, which will probably be 25c. a ton lower than last year. Last year's prices were \$2.75 for Siliceous Bessemer, and \$2.35 to \$2.60 for Siliceous non-Bessemer. Because of the reduction in Ore prices, some of the shippers are urging the vesselmen to make a reduction in the carrying charges for Ore, believing that the rate of 75c. per ton from the head of the lakes should be reduced 5c. or 10c. a ton, and rates from other ports in proportion. No action has been taken by the vesselmen as yet regarding rates, and the little chartering that has been done so far has been with the understanding that this season's rates are to be paid. Some of the Ore firms that operate their own boats be paid. Some of the Ore firms that operate their own boats have started to fit out their vessels in the past few days, and it is expected that about all the boats operated by the shippers will be running by July 1. The independent vessel owners will hold a meeting to-day to decide whether to start their boats at once or to wait until July 1. If an immediate start is decided upon, there will not be much Ore for shippent in independent hosts before July. Ore shipments down ment in independent boats before July. Ore shipments down the lakes are slowly increasing. About all the Steel Cor-poration boats that will start will be in commission by the end of this week. Some of the corporation's small boats will not be placed in commission unless conditions later in will not be placed in commission unless conditions later in the season warrant their operation. As soon as the movement of Ore is well under way, trouble is feared at the Lake Erie ports with hoisters and engineers who refused to sign individual contracts under the open shop plan. A meeting of the three Cleveland locals of the International Longshoremen and Marine Transport Workers' Association was held June 14 to consider the matter of declaring a strike, but definite action was postponed until the latter part of the week. Ore prices, for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer. \$3.70: Mesaba non-Bessemer. \$3.50. Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The market has been very quiet. A few sales were made of small lots for early delivery, but no inquirles came in for large quantities of any grade. Following the reduction of Ore prices some of the furnace interests that had been holding their prices above the prevailing market have reduced their quotations about 50 cents a ton. Others are holding their prices at the same basis that they were. We quote Northern No. 2 Foundry Iron at \$15 to \$\\$15.25, Valley furnace, for the third quarter. Some interests are asking \$15.50 for the fourth quarter. Local furnaces quote No. 2 Foundry at \$15.50, at furnace, for delivery in this territory during the third quarter, and \$15.25 for shipments outside. During the recent buying movement the majority of the local consumers covered for at least a portion of their requirements for the last half of the year and not much activity is expected next month. In Southern Iron a few sales in small lots are reported. The prevailing price is \$12, Birmingham, for No. 2 for the third quarter, although some interests are refusing to quote under \$12.50, Birmingham. The melt in this territory shows very slight, if any, improvement. Some consumers are sending in fairly good shipping orders for low priced Iron, but high priced Iron under old contracts is moving very slowly. There are practically no inquiries for Basic, Bessemer or Malleable Iron. For prompt shipment and for the third quarter we quote, delivered, Cleveland, as follows:

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реввещег			0 0			0		0 0	0	0 1				. 010.00	
Northern	Foundry.	No.	1				 			\$1	6.	15	to	16.65	
Northern	Foundry.	No.	2							1	5.	65	to	16.15	
Northern	Foundry.	No.	8							1	5.	15	to	15.65	
Southern	Foundry.	No.	2											16.35	
	70														

Coke.—The market is quiet in both Furnace and Foundry grades, the only sales reported being of small lots.

Prices remain about stationary. We quote Connellsville Furnace Coke at \$1.75 to \$1.85, at oven, for the last half. Some Coke for spot shipment is offered at lower prices. We quote high grade 72-hr. Foundry Coke at \$2.25 to \$2.35, at oven, for last half delivery.

Finished Iron and Steel.-The result of the cut in prices has so far been rather disappointing. The reduction has stimulated some activity in Steel Bars, and a few contracts have been closed in addition to contracts placed by the implement makers. Lower prices, however, have brought little improvement in specifications. About the only change noted in this regard is the bringing out of a few fairly good specifications from jobbers. The reduction has not improved the demand for Structural Material and Plates. A few inquiries have developed for these lines, but prospective purchasers are holding off in the belief that prices will be further reduced. The new prices for Bars, Plates and Shapes are reduced. being fairly maintained so far, although Eastern mills are offering Bar Iron at 1.30c., and one Western mill is reported to be selling Steel Bars at 1.30c. In all Finished lines consumers are continuing the policy of buying in small lots for their immediate requirements. Some of the implement makers in this territory have not yet placed contracts, but one interest expects to look orders aggregating about 5000 tons within a few days. Some additional contracts for Steel Bars are also expected from consumers other than the implement makers who have contracts that have not yet ex-The demand for Sheets continues light and some propired. The demand for Sheets continues light and some producers continue to make concessions of from \$1 to \$2 a ton. We quote Iron Bars at 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ½-in. and heavier, 1.70c., base, Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Warehouse business continues light. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c. to 2.10c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.65c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron 5 in., are 64 per cent. discount, and on Black Merchant Iron

Pipe, base sizes, 67 per cent. discount.

Old Material.—Quotations are 50c. a ton higher than a week ago on the majority of grades of Scrap. On Borings and Turnings the advance is \$1 per ton. All Steel Scrap is particularly strong. The strength that has developed is attributed, not to the present demand, but to an increase in the demand that is expected within the next two or three weeks, greater activity on the part of the mills being looked for because of the reduction in prices. Considerable tonnage of Scrap sold by the Baltimore & Ohio Railroad last week brought good prices, and about 1200 tons of Old Steel Rails sold by the Nickel Plate Railroad are reported to have brought a little over \$14. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails\$13.00	to \$13.50
Old Iron Rails 15.00	to 16.00
Steel Car Axles 16.50	to 17.50
Old Car Wheels 13.00	to 13.50
Relaying Rails, 50 lb. and over 22.00	to 23.00
Heavy Melting Steel	to 13.00
Railroad Malleable 11.50	to 12.00
Agricultural Malleable 10.50	to 11.00
Light Bundled Sheet Scrap 8.00	

The	following quotations are per net ton, f.o.b. Cleveland:
	Iron Car Axles\$16.00 to \$16.50
	Cast Borings 6.00 to 6.50
	Iron and Steel Turnings and Drillings. 7.00 to 7.25
	Steel Axle Turnings 8.50 to 9.00
	No. 1 Busheling
	No. 1 Railroad Wrought 12.00 to 13.00
	No. 1 Cast
	Stove Plate 9.50 to 10.00
	Bundled Tin Scrap 8.00 to 9.00

New York.

NEW YORK, June 17, 1908.

Pig Iron.—Since the closing of some round lots of Foundry Iron for a leading pump interest, and for a railroad casting shop, aggregating for different plants a total of about 20,000 tons, little has been done. There is, however, one additional order for 7500 tons pending. Low prices continue to be made, but the buying movement seems to be pretty well exhausted for the present. We quote at tidewater, Northern No. 1 Foundry, \$16.75 to \$17; No. 2 Foundry, \$15.75 to \$16.50, and No. 2 Plain, \$15.25 to \$15.50. Alabama Irons are quoted \$16.75 to \$17, for No. 1, and \$16.25 to \$16.75 for No. 2 Foundry.

Steel Pails—No new business has come out in the

Steel Rails.—No new business has come out in the Eastern market. At Ensley, Ala., the new Rail mill of the Tennessee Coal, Iron & Railroad Company has started up, having an accumulation of specifications that will insure steady operation for some time.

Structural Material.—Following the contract for 1500 tons for the Pennsylvania Railroad Company's Thompson avenue viaduct at its new yards at Long Island City, an additional purchase of 400 tons has been made for the same

work and an 800 ton contract is pending. The Hamburg-American Company's pier work at Hoboken, N. J., one section of which calls for 1500 tons, has been let to the Mc-Clintic-Marshall Construction Company, Pittsburgh. New York Central has asked bids on a further small tonnage of Steel for its work at the Grand Central Station, and the New Haven road will shortly place an additional 600 tons on its extensive Harlem Division improvements. The Pennon its extensive Harlem Division improvements. The Fehrsylvania Steel Company was awarded the 1500 tons of Steel
required by Snare & Triest for the South Ferry pier work.
Opinions are divided as to the relation of the new and old
prices of Structural Steel to the volume of construction
work. On the one hand it is argued that as the bids made for some time on fabricated work have been based on a \$4 cut in Steel, there will now be a further wait for the additional \$2. The other view is that as any reduction in Structural Shapes that has been discussed in recent months represents but a small fraction of the total cost of a Steel building, the question of price is not now a determining factor and has not been. The chief problem from the standpoint of the Steel manufacturer is the situation that has grown out of the guaranteeing of prices and the carrying over of so-called contract tonnage, which in effect is tonnage on which the buyer has an option, his taking it out being entirely contingent on the amount of business he gets. One of the possibilities of the unsatisfactory condition in which the trade finds itself in this regard is the elimination of this looseness in contracts, both as concerns prices and the carrying over of unspecified tonnage. We continue quotations on tidewater deliveries, mill shipments, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 21/4c. to 21/2c.

Bars.—The deliberations of the Eastern Bar Iron manufacturers at the meeting held in Philadelphia last Wednesday resulted in no conclusion, and another meeting has been called for Thursday of this week in New York City. While some are doubtful of a successful outcome, nevertheless the prospect of something being done continues hopeful until meetings are abandoned. The current demand for Bar Iron is spasmodic, and the aggregate volume of business for the week is believed to have been much less than that of the previous week. Quotations are a trifle higher at 1.42c. to 1.45c., New York, on ordinary specifications. Steel Bars continue to be held at 1.40c., Pittsburgh, or 1.56c., New York.

Plates.—Local conditions continue quiet. Orders are confined to small quantities. Prices of standard sizes of Plates are held as follows at tidewater; Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Fire Box Plates, 2.65c. to 3.50c., according to specifications.

Old Material.—The situation in the local Scrap market shows a few changes. Heavy Melting Steel Scrap is possibly a trifle lower. Some of the large buyers of this Scrap, who were in the market about three weeks ago, are understood to have bought quite large quantities and have withdrawn. The restricted demand for Finished Steel and the fact that a considerable quantity of Scrap is made in their own works make the Steel companies less important factors in the market. No. 1 Railroad Wrought has been selling a little more freely and at better prices. A somewhat improved demand is noted for Heavy Cast Scrap, Stove Plate, Wrought Pipe, Borings and Turnings. At last Car Wheels show a disposition to firmness, but the demand is still coming from dealers, as consumers have hardly begun to take an interest in this class of material. Relaying Rails are in good request. Quotations are about as follows per gross ton, New York City:

ons are about as follows per gross to	i, New	YORK CI
Old Girder and T Rails for melting Heavy Melting Steel Scrap		
Old Steel Rails, rerolling lengths	11.50 to	
Relaying Rails		
Old Iron Rails	14.50 to	15.00
Standard Hammered Iron Car Axles	16.00 to	
Old Steel Car Axles	14.50 to	
No. 1 Railroad Wrought	13.00 to	
Iron Track Scrap	10.00 to	
No. 1 Yard Wrought, long	11.00 to	
No. 1 Yard Wrought, short	10.00 to	
Light Iron	5.50 to	
Cast Borings		5.50
Wrought Turnings	9.50 to	7.00
Wrought Pipe	12.50 to	
Old Car Wheels	13.00 to	
No. 1 Heavy Cast, broken up	9.50 to	
Locomotive Grate Bars	10.50 to	
Malleable Cast	11.50 to	
Maneame Cast	11.00 0	12.00

Cast Iron Pipe.—The outlook is rather more encouraging. The demand for small lots is much better, and quite a number of orders for 200 to 400 tons are being placed, especially with foundries having favorable freight connections with portions of the South. An interesting feature of present conditions is the sudden scarcity of some sizes of Pipe, more particularly 8-in. Of course the Pipe is to be had if buyers are willing to pay an advanced price. The firmness of Pig Iron is making the price of Pipe stronger. The contract for the city of Rome was secured by a foundry in central New York. The contractors to whom business recently placed in this city has been awarded have not yet

made their Pipe purchases. About 6500 tons is thus still to be placed. Carload lots of 6-in, are quoted at \$24.50 to \$25 per net ton, at tidewater.

Ferroalloys.—The market for Ferroalloys continues unsettled. Whenever a specially desirable order appears in the market for any Alloy, most of the trade appears to be willing to make concessions. For 80 per cent. Ferromanganese \$43.50 is quoted, at Baltimore. The price of 50 per cent. Ferrosilicon is unchanged at about \$70, Pittsburgh. The demand for Ferrophosphorus, apparently, is beyond the supply, particularly because this material is a by-product.

John Leonard & Co., dealers in Old Material, have removed their offices from the seventh to the seventeenth floor of the Singer Building, 149 Broadway, New York. The suite of rooms now occupied is in the famous Singer tower. Much more space has been secured as well as better light and an incomparably finer outlook.

Metal Market.

New York, June 17, 1908.

Pig Tin.—Business in the Tin trade is almost at a standstill; in fact, sales since the first of the month are estimated to be considerably less than 500 tons, and it is thought that deliveries into consumption during June will run less than 3000 tons. The apparent discrepancy in these figures arises from the fact that much Tin will be delivered this month that was bought previously, and at higher prices. This week has been duller than usual, and price fluctuations have been within the narrow limits of 15 points for a week, an unusual condition. To-day, however, prices dropped sharply on London advices. Price changes have been as follows:

June																				
June																				
June																				
June																				
June																				
June																				
June	1.4 .								0											28.00

Arrivals so far this month are good, aggregating 1836 tons, and there are afloat for American ports 2927 tons, considerable of which, however, will not come in until July. The London market is lower than last week, closing at £127 2s. 6d. for spot and £128 17s. 6d. for futures. The premium of futures over spot represents more a carrying charge than anything else, as stated in the report of last week.

Copper.—The market is again quotably firmer. Electrolytic is offered at 13c., delivered, 30 days, and can probably be obtained at 12.87½c., net cash. Sales, however, have been made at 12.85c., net cash. Considerably more inquiry is noted, probably stimulated by the advance in prices, but there is not much faith in attempts to boost the market at this time. Consumption is still too far below normal. Then it must be remembered that American production is now, or will shortly be, at the highest known rate. Practically all properties are now working with the exception of the Greene, and these will possibly be restarted shortly. Then, too, the Copper from new properties is beginning to come on the market, and unless things change considerably the last half of the year will show a very large production. The Lake properties in the first half of 1908 will probably make 100,000,000 lb. of Copper, or a rate slightly lower than last year. Sellers of Lake report quite a few sales of August Copper at 13c. No inquiry, however, is in the market for later teliveries, and there is an unsold surplus of June and July Copper. A slight improvement is noted in the Wire trade, especially for Telephone Wire. Exports so far this month are fair, amounting to 12,400 tons. The London market closes slightly below last week at £58 5s. for Spot and £58 15s. for Futures.

Pig Lead.—The market is steady at 4.50c., New York, for shipments. Considerable metal has been sold at this figure. Lead bought at lower prices, of which there is much on hand, is not offered at concessions. Spot is held at 4.57½c., with little business. The chief demand has been from corroders, but Lead Pipe manufacturers have also been large takers of Lead. In St. Louis the price is slightly firmer at 4.40c. The London market is practically unchanged at £12 13s.

Spelter.—The consumption of Spelter is not more than half of normal, and the prices quoted in New York 4.57½c. to 4.60c. are barely steady. On desirable orders they might be shaded. The St. Louis market is about 4.40c. to 4.45c. Some interest was aroused in the metal trade last week over the bids for the Brooklyn Navy Yard, where a round lot of Spelter was offered at 4.35c., delivered.

Nickel.—Prices are without change, at 45c. for ton lots and 55c. to 60c. for smaller quantities.

Antimony.—Business continues light and prices are without change. Cookson's is held at 8.50c.; Hallett's at 8.50c. to 8.62½c. and outside brands at 8.25c.

Tin Plates.—The mills are actively engaged in turning out orders and prices are absolutely without change at \$3.70, Pittsburgh, and \$3.89, New York, for 100-lb. IC Coke Plates. In Swansea Welsh Plates are unchanged, at 12s. 1½d.

Old Metals.—More inquiries from domestic consumers are in evidence. These, however, continue to take the form of small orders for prompt shipment, yet buying with more freedom than formerly is noticeable, and consumers of Copper bearing Scrap are not unwilling to accumulate some stock of low priced metal. Quotations generally are steady and without change, save in Composition Turnings, where a reduction of ½c. per pound has been made. Dealers' selling prices are about as follows:

-Cents.
Cents. 12.00 to 12.25
11.75 to 12.00
10.75 to 11.00
8.75 to 9.00
7.00 to 7.25
11.50 to 11.75
7.75 to 8.25
9.00 to 9.50
4.20
3.85
3.50

Iron and Industrial Stocks.

NEW YORK, June 17, 1908.

The stock market has attracted little attention for some time, as political matters are now receiving preference. Daily transactions are decidedly limited and prices fluctuate but slightly. The market has maintained consistent strength. The range of prices on active industrial stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 36% to 37%, preferred 100% to 102; Car & Foundry common 33¼ to 34½, preferred 102 to 103; Steel Foundries common 6½ to 7, preferred 34½ to 37; Cambria Steel 30¼ to 31; Colorado Fuel 26 to 27½; Crucible Steel common 5¾ to 6; Pressed Steel common 25¾ to 28; Railway Spring common 37; Republic common 17½ to 18, preferred 65 to 67; Sloss-Sheffield common 50 to 51, preferred 96; Cast Iron Pipe common 26¾ to 27, preferred 75; Can common 43¼ to 4½, preferred 56 to 57. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 37¼, preferred 101%, bonds 96%; Car & Foundry common 37¼, preferred 101%, bonds 96%; Car & Foundry common 37½; Locomotive common 46; Colorado Fuel 27; Pressed Steel common 28; Republic common 18½, preferred 65%; Sloss-Sheffield common 50; Cast Iron Pipe common 26%; Can preferred 55¾, exdividend.

The Crucible Steel Company of America, in its report for the nine months ended May 31, issued, shows a deficit after charges, dividends and adjustments in inventory values of \$649,804. The net earnings for the period were \$03,352. The surplus on August 31 last year was \$2,457,284, so that the profit and loss surplus on May 31, after deducting the deficit for the nine months period, was \$1,807,480. Unfilled orders on hand on May 31 were 70,566 tons, against 101,910 tons on August 31.

Dividends.—The Westinghouse Air Brake Company, Wilmerding, Pa., has declared a quarterly dividend of $2\frac{1}{2}$ per cent., payable July 10.

The Garvin Machine Company, New York, has declared a semiannual dividend of $3\frac{1}{2}$ per cent. on the preferred stock, payable July 1.

The American Iron & Steel Mfg. Company has declared quarterly dividends of 1¼ per cent. on the common and preferred stocks, payable July 1.

The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 11/4 per cent. on the preferred stock, payable July 1.

The American Screw Company has declared a quarterly dividend of 1% per cent., payable June 30.

The Standard Coupler Company has declared a semi-

The Standard Coupler Company has declared a semiannual dividend of 4 per cent. on the preferred stock, pay-

able June 30.

The Standard Screw Company has declared semiannual dividends of 3 per cent. on the preferred and common stocks, payable July 1.

payable July 1.

The United Shoe Machinery Company has declared a quarterly dividend of 1½ per cent. on the preferred and 2 per cent. on the common stock.

The International Nickel Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable August 1.

The Republic Iron & Steel Company will blow in its No. 3 furnace of the Thomas, Ala., group, about July 1, and will operate the three stacks, after having but two active at once for several years. The No. 3 furnace has been entirely reconstructed. At present the company has its Potter ore property opened up so that shipments of 1000 tons a day could be made.

Canadian Rail Demand,

TORONTO, June 15, 1908.—In the House of Commons, R. L. Borden, leader of the opposition, recently asked if the Department of Railways and Canals intended to order rails from the Algoma Steel Company, whose works, he understood, were shut down for want of orders. The Minister of Railways and Canals replied that the Department could not buy rails without money, that retort evidently having reference to the opposition's obstruction to the voting of supplies, which obstruction continues, and seems likely to continue until a modus is reached on the pending Election bill. The Minister added that some orders might in the near future be given to the Algoma Steel Company by the Transcontinental Railway Commissioners. Nothing was said as to the possibility of the Department itself having any orders to place, but as it would be buying for the Intercolonial Railway, it is almost a certainty that the Dominion Iron & Steel Company would be the Canadian company most likely to secure them, on account of its comparative proximity to the points of delivery.

The Grand Trunk Pacific Railway Company's own buying power will be improved by a measure now before Parliament. The measure in question was introduced by the Minister of Finance. It is to authorize the company to pledge on road construction account the bonds guaranteed by the Government. Of course, the company's power to sell the bonds was always indisputable, but it appears not to have been enabled to use them as security for temporary loans. It recently offered some of its guaranteed bonds in London, but the underwriters were not successful in finding buyers for them at the price sought. The company, desiring to be in a position to hold its bonds for a more favorable market and yet to make use of them for present financing, asks authority to pledge them for short term loans. This the Government has consented to, and the bill is for the purpose of validating such use of them. The bill also provides for the granting of a letter of credit to the company for \$1,000,000 out of the proceeds of the guaranteed bonds, such letter of credit being necessary to permit the use of money belonging to the special account in which the company is required to keep the proceeds of the guar-

As to the rail needs of the Intercolonial, some information brought down in the House some days ago suggested that they are not at the moment of market importance. According to the statement referred to a sufficient quantity of 80-lb, rails to lay 52 miles of track is piled along the line, where the rails have lain since they were delivered a year ago last winter.

The rail business is waiting on other developments, the cardinal one being the outcome of the crops. If the crops are good and prices of agricultural products keep up or advance, there will be a strong forward movement in railroad construction. In the absence of these conditions there will be a great curtailment in railroad building plans. Railroad companies have not the aid of the banks as they had in recent years. For some time previous to the slowing down of business last autumn, some of the larger banks were important aids to railroad building. They did not hesitate to make big advances and take care of large floating indebtedness, as they had full confidence in the ability of the borrowers to sell bonds against their property, which had been brought so much farther into earning utility by the advances. But many things have happened to make the banks less disposed, if not less able, to anticipate the successful issue of bonds for millions of dollars, and the railroad company that desires to construct new lines must market its own issues in order to raise the money even for the initial stages of the work.

At the annual meeting of the Mt. Vernon Car Mfg. Company, held at Mt. Vernon, Ill., June 9, the following officers were elected: W. C. Arthurs, president, to succeed D. O. Settlemire, deceased; R. K. Weber, vice-president; D. P. Settlemire, secretary and treasurer; Frank Snyder, superintendent.

C. A. C. J.

The Machinery Trade.

NEW YORK, June 17, 1908.

The demand for machinery is holding up well to the level of the past few months, and with few exceptions no increase in business is noticeable, particularly with the machine tool houses. Though the demand has been very light for some time, and there was practically no change either one way or the other the past week, the fact that trade has shown no further decrease and that conditions seem to be improving has created a better feeling among machinery houses, many of which are of the opinion that the worst is over and that business is developing an upward tendency. The various classes of mechanical equipment are experiencing different degree of activity, the loss of one offsetting the gain of the other, and there does not appear to be that uniform demand which usually accompanies a genuine improvement. In contrast to the dullness in the machine tool trade is the activity among the buyers of power plant equipment. The railroads, which are usually looked to for a great deal of machine tool business are still a negligible factor in the market and from reports we have received from a large majority of the important systems throughout the country there is but little liklihood that they will purchase much mechanical equipment this summer, aside from a few machines here and there for replacement. On the other hand manufacturers of power plant equipment are enjoying a better trade. The number of municipal works established have aided them much, and within the past week two large propositions have come to the front that will necessitate the purchase of an extensive line of equipment. These two projects are bound to exert a favorable influence on the machine tool trade, as cranes and some tools are usually installed in connection with every large installation of power plant equipment.

Large Purchases by Delaware, Lackawanna & Western Raiiroad.

Machinery to the amount of \$75,000 was recently pur-chased by the Delaware, Lackawanna & Western Railroad for its new shops now in course of construction at Scranton, Pa. These machines were on the several lists sent out some time ago and are to be installed in the new foundry and blacksmith shop. The company has built only a part of the entire locomotive plant contemplated at that point and the purchases of machine tools for the main shop will not be made for some time to come. It will be remembered that inquiries were sent out a few weeks ago for the structural steel for the new machine shop, and it is the intention to have this well under way before taking up the purchase of equipment. This shop will be the largest of the group of buildings and will be 346 x 582 ft. At the present time the company is not purchasing any shop or power house equipment excepting such as will be needed in connection with its new foundry and blacksmith shop at Scranton, but during the next few months it will probably purchase a few tools for its Keyser, Valley freight car repair shops, the cost of which will be about \$12,000. No definite sum, however, has as yet been appropriated for the purchase of mechanical equipment during the next fiscal year.

chanical equipment during the next fiscal year.

Machinery houses are interested in the new building to be erected by the Christie Iron Works, New York. be 49 x 75 ft.

The American Concentrator Company, Joplin, Mo., manufacturer of mining machinery, which is to move its business to Basic City, Va., has built and equipped its new plant. In about six months the company expects to purchase

and additional machinery, including a bulldozer, bolt machine, 25 ton wheel press and a No. 3 or 4 milling machine.

Fred A. Phelps, 22 Clinton street, Newark, N. J., is purchasing equipment for a large four-story plant to be erected in Newark for Larter & Co., jewelry manufacturers. The equipment needed will include a 35-kw. generator, 75-hp. direct connected anging besides four equipment needed will include a 55-kw. generator, 75-np. boiler and a 55-hp. direct connected engine, besides four small motors, a freight elevator, &c. The company will move its present plant into the new building and later on it is probable that some machine tools and other manufacturing equipment will be purchased to bring the plant up

Important Power Plant Equipment Inquiries.

The Public Service Corporation of New Jersey has let The Public Service Corporation of New Jersey has let contract for the construction of an extensive addition to its Marion power house, which was erected about three years ago, and in which, it will be remembered, considerable machinery purchased in this market was installed. The new addition will more than double the capacity of the power house, as the company is figuring on installing about 18,000 km, in two cate. The addition will consist of a building kw. in two sets. The addition will consist of a building, 80 x 180 ft., and it will be of steel and concrete construction. One section, devoted to power equipment, will have an elevation of about 60 ft., while the section in which the switchboards and light equipment will be installed will be three stories in hight. The equipment will include two generating stories in hight. The equipment will include two generating sets of about 9000 kw. each, coal conveying machinery in which belt conveyors will probably be used, switchboard equipment, boilers, mechanical stokers and about everything that goes to make a complete power house equipment. The company has equipment to generate about 16,000 kw. of power at present, and its equipment in the Marion plant includes Curtiss turbines, Babcock & Wilcox boilers, Green

fuel economizers and Robins belt conveyors.

The Southern Power Company, Charlotte, N. C., which has been figuring on constructing a large steam power plant near Charlotte, has inquiries in the market for about 50,000 hp. of power equipment, which it is estimated will cost about \$2,000,000. It is understood that turbines will be preferred. The requirements cover coal conveying machinery, mechan-ical stokers, fuel economizers and other power equipment. The company was for some time considering the advisability of putting in a producer gas plant, but its inquiries now out indicate that that plan has been abandoned. This plant will supplement a hydro-electric plant the company now operates of 75,000 hp., and the inquiries are sent out under the signature of J. W. Fraser, who is assistant chief engineer, and can be addressed at Charlotte. W. S. Lee is the chief en-

The Standard Steel Company of Lewistown, Pa., which is a subsidiary interest of the Baldwin Locomotive Works of Philadelphia, has inquiries in the market for about 10,000 kw. of power equipment, in which, it is understood, turbines will be favored. This company manufactures accessories to be used in the construction of locomotives, and its entire output is controlled and used by the Baldwin Loco-motive Works,

There are inquiries in the market for power equipment and power house accessories from the New York Edison Company to generate about 8000 kw. of power.

ome inquiries are out from Henry L. Dougherty & Co., 80 Wall street, New York, for machinery for a good sized power house for the Denver Gas & Electric Light Company, Denver, Col. Mr. Scott, who is with Henry L. Dougherty & Co., is in charge of the purchases.

All bids opened May 28 for the installation of an air

lift pumping plant at Alta Loma to increase the water supply of Galveston, Texas, and for the erection of an addition to the pumping station, have been rejected and new bids will be received until July 2 by the City Secretary of Galveston for the complete mechanical equipment of an air lift pumping station, to consist of one 1200 cu. ft. air compressor, one 700 cu. ft. air compressor, one 200 hp. water tube boiler and all accessories, including about 16,615 ft. of air pipe to wells.

Business Changes.

The Cleveland Pneumatic Tool Company, Cleveland. Ohio, has removed its eastern office from 120 Liberty street to 676 Fulton Terminal Building, New York. C. A. Mc-Inturff, who has represented the company in the East for

The Buffalo Foundry & Machine Company, Buffalo, N. Y., which, besides making exceptionally large castings, builds acuum drying and impregnating machinery, vacuum vacuum drying and impregnating machinery, vacuum drum, shelf and rotary dryers, compressors, pumps, condensers, and the Bell steam hammer, recently established a New York office at 148 Liberty street, having engaged H. E. Jacoby as resident engineer and manager of New York office.

Catalogues Wanted.—W. Barclay, Edmonds, Wash., is in the market for nut machinery, and will be pleased to receive catalogues and other information on the subject.

Chicago Machinery Market.

CHICAGO, ILL., June 16, 1908.

While there is nothing that can be pointed to in the volume or character of machinery sales as indicating unmistakable improvement, yet the feeling of confidence in the beginning of a forward movement soon after the midyear turn is undoubtedly stronger and more general. By this is meant, not that the trade is expecting a phenomenal increase of business at that time, but rather that orders will be enough more plentiful to leave no doubt as to the improved strength of demand. There is moreover no question that most of this confidence is based on the expectation of a change in the attitude of railroad purchasing departments. Information has filtered through from these and other railroad sources giving strong assurance that hopes of more liberal patronage will not be wholly disappointed. In addition to this, inquiries of a significant nature have been lately received by the machine tool houses from some of the larger industrial interests which seem to portend some moderate purchases, at least, in the near future. Prior to the money stringency of last year a number of large concerns put out extensive lists of machinery requirements on which bids were taken, but owing to adverse developments orders.

Rumors to the effect that some of these were not placed. deferred lists will be issued before long, at least in part, are current in the market, but it is thought by those advised that any considerable buying of this kind will depend to a large extent on the trend of events developing within the next 30 days. Locally the atmosphere is surcharged with political interest, which centers upon the National Republican Convention convened in this city on Tuesday, June 16. It is difficult to judge how far the settlement of preliminary questions involved in party nominations will go toward quieting the hurtful disturbing effects which such political uncertainties always have upon business. That much of the hesitancy shown in the projecting of commercial plans and enterprises is due to apprehension as to the re-sults of election is not doubted and each step toward the final solution ought to exert a helpful influence upon the

final solution ought to exert a helpful influence upon the machinery and all other trades.

The Independent Pneumatic Tool Company, Chicago, has arranged for a complete exhibit of its line of Thor piston air drills and reamers, pneumatic flue rolling, tapping and wood boring machines, portable pneumatic grinding machines, pneumatic chipping, calking, beading and riveting hammers, pneumatic wood saws, hose couplings, and other air appliances, at the Railroad Master Mechanics' and Master Car Builders' Conventions to be held at Atlantic City, N. J., June 17 to June 24, inclusive. The company's exhibit will be located in spaces 205, 207, 209 and 211 on Young's Pier, where there will be about eight representatives Young's Pier, where there will be about eight representatives

in attendance

Bonds in the sum of \$20,000 have been authorized by a vote of the citizens of Kewaunee, Wis., the proceeds of which are to be used for the installation of a municipal light plant. Plans and specifications for the plant are being drawn by Oscar Clausen, consulting engineer, which will be submitted to contractors for bids within the next two or three weeks. Whether steam power or producer gas will be employed is a question now under discussion.

The Central Light & Power Company, Limited, Yolseley,

Sask., Canada, has decided to increase the capacity of its plant by 150 hp.; the machinery employed will consist of a gas engine and suction producer operating an alternating a gas eight and section products operating an attention of 90 kw., connected to engine through a flexible coupling. In addition to the power equipment a motor driven centrifugal pump will be installed to deliver water to the cooling tower, also a motor driven fan for the tower. Should the company find it impracticable to get

tower. Should the company find it impracticable to get delivery of the gas engine equipment in time to meet the demands of the winter load it will install a temporary steam plant, possibly second hand, to help handle the load until such a time as the gas engine equipment can be erected. The manager of the plant is Lee Boyer.

The Consolidated Supply Company has been incorporated and will make a specialty of general steam and electric railroad, mill and mining supplies, with headquarters at 321 Dearborn street, Chicago, Ill. The office and store occupy the ground floor in the Manhattan Building, the storeroom extending through and fronting on 60 Plymouth place. The extending through and fronting on 60 Plymouth place. The incorporators are L. C. Hopkins, John P. Mahoney and J. L. Benedict. Mr. Hopkins has had some eight years' experience Benedict. Mr. Hopkins has had some eight years' experience in the railroad and supply business. For the past year he was connected with the sales department of the Chicago Pneumatic Tool Company, and previous to that was four years with Fairbanks, Morse & Co. Mr. Mahoney was formerly chief clerk to the purchasing agent of the Toledo, St. Louis & Wabash Railroad. Mr. Benedict was in the railroad business 10 years, and for the past five or six years was connected with the Chicago Pneumatic Tool Company as manager of its Chicago office and on the read. ager of its Chicago office and on the road.

Philadelphia Machinery Market.

PHILADELPHIA, PA., June 16, 1908.

While actual business is still of comparatively small proportions, there is a decidedly more optimistic feeling and the trade looks forward to a somewhat better demand in the near future. While single tool orders still predominate, there have been a few of larger size placed. The greater proportion of the recent orders has been coming from the smaller buyers, but some new and larger concerns are apparently now about ready to enter the market. The larger industrial concerns are still practically out of the market, and while little is expected from the railroads during the current month it is believed that after July 1 railroad buying will become more active, but no extensive purchasing is expected until the general situation improves.

Considerable attention by both manufacturers and merchants will be given the Master Car Builders' and Railway Master Mechanics' conventions at Atlantic City, N. J., during this and next week. A number will make exhibits of tools and machinery at the conventions.

Manufacturers vary somewhat in their reports as to the condition of the trade. Some find a slow, gradual improvement from month to month, while others note little change in the demand. The belief is general that some betterment will be noted before long, probably late in the summer or early in the fall. In the meantime plants continue in opera-tion on a more or less restricted basis.

Second-hand tools and machinery continue fairly active.

For some classes of medium size metal working tools there has been a larger inquiry, and some of the better grades of tools are becoming somewhat scarce. Dealers report sales as being quite large on the whole and prices are being pretty well maintained. A little better demand for medium size second hard beilows in grounted but the trade interest. second-hand boilers is reported, but the trade is not brisk.
Manufacturers of new boilers of the medium powers report the demand as somewhat better, and several good sales have been reported.

Foundries report a slightly better demand, but the business is much scattered, and while some iron and steel cast-ing plants show a small increase in the tonnage booked, others have made practically no gain. The absence of railroad work is being severely felt by both iron and steel foundries. Jobbing foundries as a rule are dull and dependent to a large extent on day to day business.

Ballenger & Perrot, architects and engineers, have com-pleted plans and specifications for a modern manufacturing building for Edward Stern & Co., Inc., to be erected at the northeast corner of Seventeenth and Vine streets. The building will be 117 x 126 ft., six stories. Reinforced concrete will enter largely in its construction. There will be a 40,000 gal. sprinkler tank and a 5000 gal. house supply tank, on a concrete tank tower. One passenger and two freight elevators are to be installed, while modern toilet equipment and other features will also be installed.

The United Gas Improvement Company is taking esti-

mates for a one story and basement valve house, ft., and foundations, for a 3,000,000 cu. ft. gas holder, 117 ft. 6 in. in diameter, to be built at the West Philadelphia station of that company, Forty-seventh and Chestnut streets.

The Millard Construction Company, it is understood, has taken title to a plot of ground of about 61/2 acres, adjacent to the New York Division of the Pennsylvania Railroad be-tween Tacony and Holmesburg. It is said that the purchase has been made for use as a site for storage and a repair plant for its machinery, and that engineers will begin at once to draw plans for buildings for storage and work shops. The Detrick & Harvey Machine Company, Baltimore,

Md., reports no particular improvement in business the past month. While a number of inquiries have been received, orders do not materialize rapidly for machinery of any size. No genuine improvement in the general demand is looked for by this concern until confidence in industrial progress

Plans are being prepared by P. A. Kley, architect and engineer, for additions to the packing plant of E. J. Schwarz, Brother & Co., Newark, N. J. A two-story rendering and hide house 50 x 200 ft. is to be erected, as are

also a one-story power house and other buildings.

N. J. Doyle & Co, have been awarded contracts for the erection of a ward building and sewage system at the State Homeopathic Hospital for the Insane, near Allentown, Pa. Their bids were \$153,600 and \$29,518, respectively, for the two items. The same firm was awarded the contract for pipe fitting in connection with the work.

The Newton Machine Tool Works, Inc., notes the active business obtainable to be slowly growing, while the increase in prospective business is quite pronounced. A slight gradual improvement has been noted from month to month, and it is believed that considerable business will come out early in the fall. A fairly satisfactory demand is reported for medium size cold saw cutting off machines and slotting machines. Recent orders include one for a large double chord boring machine, 60 ft. between centers, and others for a heavy melting machine, a large cold saw cutting off machine and several special tools.

The Hilles & Jones Company, Wilmington, Del., reports that there has been no material change in the demand. Orders are not very plentiful although several of interest have been recently booked, including two motor driven machines for the Saucon Works of the Bethlehem Steel Company, one a heavy angle shearing machine of capacity equal to shear 8 x 8 x 11/2 in. angles; the other a horizontal bending and straightening press for bending and straightening beams, channels, &c., up to 20-in, sections. One of the shipments made by this company last week comprised 18 rail straightening presses, each driven by an individual motor, and designed for use in straightening 100-ib. rails, for the Indiana Steel Company, Gary, Ind. An outfit of machinery, including a heavy multiple punch, spacing table, bar shearing machine, flanging clamps and heavy plate bending rolls, is also being completed for the new plant of the Standard Oil Company at Bay Way, N. J.

The Steel Heddle Mfg. Company has had plans drawn for considerable improvement to its plant at 2110 Allegheny avenue. New boiler and pump rooms, with equipment, are contemplated, as well as a coal pocket and other improve-

ments.
The Commissioner of Health, Harrisburg, Pa., will re-

ceive proposals until June 25 for furnishing all labor, material and the necessary equipment for a laundry to be installed in the Pennsylvania State South Mountain Sanatorium. Palo Alto, Pa. Plans and specifications in connection with the equipment to be furnished may be obtained from Samuel G. Dixon, Commissioner of Health, Harrisburg, Pa.

Cleveland Machinery Market.

CLEVELAND, OHIO, June 16, 1908.

The local machine tool market shows no improvement; in fact, the volume of orders and inquiries seems to have fallen off slightly during the past few days. This is particularly true of second-hand tools, for which there was a fair demand about the first of the month. Dealers continue to receive some scattering orders, but they are mostly for single tools and come from small concerns. The larger industrial plants are still practically out of the market. Little business is expected from this source as long as the plants are running on limited capacity and still have many tools that are idle. About the only exception is the automobile plants, several of which have placed orders for a few tools and others are expected to be in the market soon for a limited amount of additional machine tool equipment. The automobile people are greatly encouraged by the volume of orders that came in late in the season and some of the local plants have been running at full capacity for several weeks, one at present being operated with full force both day and night. Some new industrial propositions are being developed, but in most cases the projects are small and very few machine tools will be required.

The Cleveland Board of Education last week awarded the contracts for the machine tools and the woodworking machinery for the new Technical High School. There were a large number of bidders, and the strong competition for the business resulted in considerable price cutting by bidders. The purchases were divided between a number of dealers and manufacturers.

Builders of machine tools report little, if any, improvement in the volume of their orders, and most of the plants that make tools exclusively are running on half or less of their capacity. In some lines of special machinery, however, there is considerable improvement in the outlook. Some very good inquiries have come out for mining machinery for Western mines, and it is expected that some good orders for machinery of this character will be placed in a few days. Makers of pneumatic tools report no improvement in their orders, the volume of business being very light, While the immediate outlook is not good, makers of pneumatic tools believe that the reduction in structural steel will stimulate activity in structural shops and create a new demand for pneumatic tools in the fall.

Outside of tool building lines the general situation looks considerably brighter. Many manufacturers engaged in various metal trades report a fair improvement in the volume of orders, and the general feeling regarding the gradual return of normal activity is far more hopeful than it was a few weeks ago. In foundry lines little improvement is noted as yet. The jobbing trade reports the demand light and for improvement or orders being small and for improving the needs.

and irregular, orders being small and for immediate needs.

The Dover Mfg. Company, maker of sad irons, Canal Dover, Ohio, has just about completed additions to its plant which will double its capacity. The company has installed a new power plant of 300 hp. capacity, including a Corliss engine and water tube boiler, with rope transmission power, and has added considerable special machinery. The company reports that its business kept up very satisfactorily during the months of depression, except in April and May, when there was some falling off. Conditions improved again materially with the first of June and the company is now receiving a good volume of orders. The plant will be shut down during a portion of the summer, when some further improvements will be made. The company, which enjoys a good foreign trade, is now making preparations to extend its sales to some important European territory which previously it had not attempted to reach.

sales to some important European it had not attempted to reach.

The Ohio Shovel & Stamping Company, Canal Dover, Ohio, has recently been reorganized. O. C. Eben, the former president and general manager, retired and was succeeded by D. Defenbacher, the former vice-president. The other new officers are Victor Wentz, vice-president, and J. F. Defenbacher, secretary, and treasurer.

other new officers are Victor Wentz, vice-president, and J. F. Defenbacher, secretary and treasurer.

The Buckeye Steel Castings Company, Columbus, will erect another building, 60 x 345 ft., of steel construction, similar to the two buildings that are now being built by the company, except that it will be higher. The building will be used for a machine shop, and an addition will contain the blacksmithing, electrical and fitting departments and repair

The Ohio Stove Pipe Mfg. Company, New Philadelphia, Ohio, reports considerable improvement in the volume of its

orders during the past few weeks. Its business so far this year is fully 75 per cent, as large as a year ago. The Lake Erie Nail & Supply Company, 412 Frankford

The Lake Erie Nail & Supply Company, 412 Frankford avenue, Cleveland, is preparing a new catalogue showing its line of mine, mill and factory supplies. The catalogue will be ready for distribution August 15.

be ready for distribution August 15.

The Standard Tool Company, Cleveland, maker of twist drill, chucks, reamers, &c., reports a very satisfactory improvement in orders during the past few weeks. The company's export business is good and kept up well during the dull period of domestic trade. The company is now operating its plant five and one-half days per week.

The Enterprise Electric Company, Warren, Ohio, that

The Enterprise Electric Company, Warren, Ohio, that was organized a few months ago to make transformers, has leased a building for new quarters, its present plant being too small for its increasing business. Some new machinery will probably be installed.

The Quad Stove Mfg. Company, Columbus, has received notice from the War Department that its bid for furnishing field ranges for the United States Army for the year beginning July 1 has been accepted. The contract provides that a maximum of 100 steel ranges per month can be ordered for camp outfits.

With a capital stock of \$25,000, the Multiplex Concrete Machinery Company, Toledo, has been incorporated by R. E. Teits, A. E. Seikel, W. R. Dawson, G. A. Coldwell and A. Feilbach.

Feilbach.

The Columbus Mfg. Company, Columbus, has been incorporated, with a capital stock of \$10,000, to make automatic vending machines and other specialties. The incorporators are J. W. Haynie, W. H. Sutherland, W. H. Whitford, C. A. Collins and B. B. Wells.

Harry Klar and C. C. Klar have under construction a construction of the construction of the construction.

Harry Klar and C. C. Klar have under construction a new foundry in Canal Dover, Ohio. The plant will be operated under the name of the Valley Foundry Company. It is expected that it will be completed in about six weeks.

New England Machinery Market.

WORCESTER, MASS., June 16, 1908.

Interest in the trade centers on the outcome of the reduction in the price of steel, as it may influence the general situation, and especially on its effect upon the machine tool market. There is already an inclination on the part of buyers to argue that machinery should respond to what is termed in this connection a general tendency toward lower prices; and more specifically that prices of machinery should be reduced because its raw materials have gone down. But it is well known that the difference in the cost of a machine resulting from the lower price of steel as announced would be so trifling as to be unworthy of consideration; and even if the effect of the new schedules were an important one in this respect the machine tool builders would see small reason for changing their view that a reduction in their lists would mean little if any increase in the volume of their orders. In response to tentative inquiries sent out by purchasing agents to sound the market, no inclination is shown anywhere to change prices. The purpose of maintaining them as they are, which was greatly strengthened at the time of the Atlantic City convention, will undoubtedly stand. In so dull a market there is naturally a temptation to make concessions to customers, but it is still true that there are few cases of yielding, and these are confined, so far as can be learned, to houses that are not members of the National Machine Tool Builders' Association.

The machinery trade is no more active than it has been. The little spurt of May has faded, and things are as they have been most of the time since the first of the year. Some tools are being sold, but the number is not great. Inquiries are less numerous if anything. The dealers have settled down to the belief that the summer will be a dull one, and any improvement will come in the nature of a pleasant surprise. But with most business houses they believe that a revival of business is not very far away. The local crop situation in New England is a promising one, in common with the great agricultural regions of the West, which means business for those houses which sell machinery and equipment to the farmers.

The sudden return of activity in cotton manufacturing has made conspicuous the exceedingly low stocks of mill supplies and accessories in manufacturing, a condition that is probably typical of industrial establishments in general. The cotton mills have placed not a few rush orders for supplies and machine parts during the past fortnight. While the mills were dull, necessary repair parts were obtained by robbing idle machinery, and such accessories as spools and bobbins have been used up in the same manner, until, with the return of better business and the consequent starting up of a much larger percentage of available machinery it became necessary to go into the market in a hurry and order

with time of delivery as the factor rather than price. The business of certain manufacturers of these goods has re-ceived a notable impetus in this way, even to the extent of night work. It seems fair to assume that the same condition will arise in other lines of manufacturing when the influence

arrives which will start up business again.

One of the large machinery houses whose storehouse was wet down during a recent fire has settled its losses with the fire underwriters on a new basis, and has established a pre-cedent which will doubtless be followed in the future. There cedent which will doubtless be followed in the future. There was no loss by fire; the heat did not reach the large stock of new machines. Immediately after the blaze was extinguished a force of men was set to work cleaning the tools, removing all traces of water as far as possible until the stock looked to be in as good condition as ever. The adjusters took the ground that there was little damage. The answer of the dealer was that it was impossible to tell what loss had been incurred unless the machines were taken down in their home shops; that idle machinesy especially new in their home shops; that idle machines were taken down in their home shops; that idle machinery, especially new machinery, was apt to suffer from water in the bearings or other parts which could not be reached in the cleaning up, and consequently it would be impossible to sell the stock with the usual guarantee to customers. The machinery could be sold, however, at a discount, without the guarantee customers being willing to take the risk for a saving of \$50 or \$100 or more, especially at a time when they could overhaul the tools in their own shops and make necessary repairs if they should be required. Consequently the dealer proposed that the insurance people bear the amount of this shrinkage in value. At first this logic did not appeal to the adjusters, and they suggested taking the entire stock themselves and disposing of it in the market, in the belief that the inducement of say 5 or 10 per cent. reduction would be sufficient to make the sale an easy one. Investigation revealed to them the condition of the market. The only other option, if the suggestion of the dealer was not adopted, was to send the machines back to their respective factories for overhauling, this to be done at the expense of the insurance companies. It was finally decided that the shrinkage plan, as described, was the most feasible one, and it was accepted. As a consequence a large number of new machines without a guarantee has been placed on the market,

The Commission on Industrial Education, Worcester, has submitted a report to the city government recommending the erection of an industrial school building, to cost \$133,000, to have accommodations for 200 boys. The commission recommends that in view of the importance of the metal trades in the locality and the fundamental character of the machinists' trade the school shall be for the training of boys in that trade and kindred lines. The plans for the building include a machine shop, 50 x 120 ft.; woodworking room, 50 x 90 a machine shop, 50 x 120 ft.; Woodworking room, 50 x 90 ft.; tool making and die room, molding room, casting, cleaning room, blacksmith's shop; engine and boiler room, to contain a 30 hp. engine; 50 hp. boiler; feed water heater, pump, &c.; draughting room, &c. With the establishment of the school the State of Massachusetts will pay one-half and the city one-half of the cost of maintenance, totaling, it is estimated about \$822 000 per approximately specific stimulations.

is estimated, about \$22,000 per annum.

The Western Electric Company has established a branch house at 113-115 Purchase street, Boston, where a complete line of power apparatus, electrical supplies and telephones will be carried. H. B. Gilmore will be the Boston manager. The company has bought the supply business of the Electric Goods Mfg. Company, Boston, which will, however, continue

Goods Mrg. Company, Boston, which will, however, continue the manufacturing end of its business. The Boston house is the twentieth to be established by the Western Company.

The United States Court of Appeals sitting at Boston has handed down a decision for the plaintiff in the suit brought by the Blake & Knowles Steam Pump Works against the Warren Steam Pump Company, alleging infringement of patents on improvements on pumping engines known as as the Whit-ing and Wheeler and the Hall and Gage patents. This type of engines is used to withdraw water and air from steam

The Leeds & Catlin Company, Middletown, Conn., has established a department for the manufacture of phonographs, this being an addition to the line of disk and cylinder records. The company states that it has purchased the

machinery needed for the present.

Word comes from Pittsfield, Mass., that the effort will be made to reorganize the business of the Berkshire Motor Car Company of that place. The company became insolvent some time ago, and the stock and equipment were purchased at auction by the bondholders. It is stated that as soon as certain litigation is ended the work of re-establishing the business will begin.

The Bigelow Carpet Company, Ciinton, Mass., has begun the erection of a new power house, which will cost, equipped, some \$500,000. It will be the central plant from which

power will be supplied to the entire great plant.

The Rhodes Year Clock Company, Hartford, Conn., has been incorporated in Connecticut, with authorized capital stock of \$30,000, to manufacture a patented clock. C. M. Rhodes, Westfield, Mass., is president; C. F. Wood, Hartford, secretary and treasurer; William W. Pomroy, Suffield, Mass., Waster, West, W. A. Rayder, West, Conn., vice-president; these officers and M. A. Barden, West-

The company states that it has not yet prefield, directors.

pared its list of machinery and other requirements.

The Standard Company, Torrington, Conn., manufacturer of automobile and bicycle accessories, states that there is no truth in the published rumor that it is to begin the manufacture of automobiles

The Waterbury Mfg. Company, Waterbury, Conn., has begun the foundations of the first of its new group of manufacturing buildings which are planned to replace the older of the present structures and at the same time increase manufacturing capacity. The building will be of mill construction, 40 x 180 ft. and 40 x 87 ft., and six stories.

The Davis Mills, Fall River, Mass., cotton manufacturer,

is planning to increase its capital stock from \$500,000 to \$1.250,000, the purpose being to erect a new mill with capacity of 65,000 spindles and corresponding weaving and other machinery. It is presumed that an additional power Hobart E. French, receiver of the Bridgeport Safety

Emery Wheel Company, Bridgeport, Conn., states that when business revives steps will be taken to put the business on a substantial financial basis, and that in the meanwhile the plant is being run on as economical a basis as possible owing to the depression in business.

The H. W. Caldwell & Son Company, Chicago, Ill., engineer, founder, machinist and manufacturer of elevating, conneer, founder, machinist and manufacturer of elevating, conveying and power transmitting appliances, has opened a New England engineering and sales office at Room 337, Oliver Building, 141 Milk street, Boston, Mass. This office is in charge of Malcolm R. White, mechanical engineer, who will give attention to engineering propositions, inquiries and orders from the New England States.

Cincinnati Machinery Market.

CINCINNATI, OHIO, June 16, 1908.

Machinery and machine tool manufacturing interests are much in evidence just now through the work of the National Prosperity Association of Cincinnati; in fact, these interests are easily taking the lead in the movement to make July 1 reemployment day in this section. Great impetus was given the movement at the dinner of the Cincinnati Metal Trades Association in Chester Park June 12, and whether or not the machinery producing interests will find it profitable to increase their forces materially on that date, the sentiment is productive of a commendable form of optimism, and it is believed by the most conservative that the industrial situation is bound to profit, generally speaking.

In special machinery lines business continues good; that is, considering general conditions, the situation is satisfac-Inquiries have increased in volume, and, to judge from their tenor as evidenced in correspondence with a dozen or more large concerns in this district during the past week, foreshadow an early buying movement. Particularly true is this of the manufacturers of boiler and engine and electric power equipment. Boiler manufacturers report a good business on small lots and from all parts of the country. In the main these are for medium and small sized power units. One manufacturer reports inquiries heavier during the past 10 days than for a year, and that his concern is now three and four days behind in estimates, much of which is of a character that presages an early placing of contracts. Most of the inquiry for boiler equipment is for the horizontal tubular type, and there is also considerable interest manifested in tank work and small structural shapes. Pressed steel specialties are also active. As a rule, the action of the steel manufacturers in announcing the published list of reductions is deplored; that is, the prevailing sentiment seems to be that the cut is insufficient and it was too long deferred. Machinery men hereabout feel that the long awaited buying movement was imminent just when the cut was announced, and it has only served to defer contracting: the buyers believing that the bottom has not been reached, entailing therefore another tedious delay.

In the machine tool lines the situation remains about the

-neither better nor worse than at the opening of June. Inquiries are somewhat better—a little firmer in tone, and more promising, but the large railroad interests and general machinery establishments are still holding off. Machinery selling agencies report a much better feeling, and prospects good, with considerable inquiry for second-hand tools, and within the past few days and weeks some fine inquiries for the larger and more expensive tools. All the large producing interests here in the tool line are awaiting the close of June with more than ordinary interest and anticipation; for it marks the close of the fiscal year with the great railroad cor-porations, and much of the late correspondence with these interests indicate that some fair-sized specifications are in preparation.

On Saturday, June 13, Cincinnati organizations enter-tained a group of engineers from the Department of the Interior, who were here to look over the ground in the

matter of the proposed central fuel and mineral testing plant of the United States Geological Survey. They visited various locations in the city and suburbs. The new plant plant of the United States Geological Survey. They visited various locations in the city and suburbs. The new plant will be located in one of four cities, Pittsburgh, Cincinnati, Chicago or St. Louis, although the Government has applications and invitations from 36 other cities. The city will first be selected, then the location in that city. A tract of not less than 20 acres is needed, and it must have good with the facilities. The conjument from the cavant branch switching facilities. The equipment from the seven branch plants now in operation will then be moved to the new cen-tralized location where 180 experts and many laborers will tralized location where 180 experts and many laborers will be employed. The visitors included Dr. J. A. Holmes of the Survey, Prof. W. F. M. Goss of the University of Illinois, J. Knox Taylor, supervising architect of the United States Government; Capt. Robert W. Hunt of Chicago, and Secretary Manning of the commission.

Federal Judge A. M. J. Cochran, at Covington, Ky., on June 13, handed down an opinion dismissing the case of Emil Pollak and Gustav Hilb as trustees, against the Licking Coal & Iron Company of Covington, for lack of jurisdiction. The mill is one of the oldest in this section, and has been idle since the beginning of the litigation, which

has been idle since the beginning of the litigation, which began with the case filed by the parties mentioned against J. C. Droege, Fred J. Droege and William Droege, to prevent their voting 2488 shares of stock at the stockholders' meet-

Considerable local interest is taken in the incorporation of the Freericks Hot Water Heating System Company, which will erect a large manufacturing establishment, and will have a capital to start of \$1,000,000. Various sites are will have a capital to start of \$1,000,000. Various sites are being visited and a selection, it is said, will be made within a few days. The incorporators are Dr. Arthur Freericks, F. S. Goldsmith, Charles S. Nagel, George E. Brill, and W. B. Stier. The third and fourth floors of a large power building at Pearl and Lawrence streets have been rented by the company for present needs. the company for present needs.

Motive power superintendents of all the railroads met with the Cincinnati Smoke Abatement Committee, June 13,

with the Cincinnati Smoke Abatement Committee, June 13, to consider ways and means for eliminating the smoke from locomotives. It was decided that electricity as motive power was the only solution. Engines are to be watched and records made of results.

The United States Tool Company, Vincennes, Ind., which recently moved its plant into the building of the Vincennes Woolen Mills on the South Side, has begun operations in the new establishment with a full force of employees. The company appropries that it has a good list of orders ahead.

pany announces that it has a good list of orders ahead.

Capitalists from Dayton, Cleveland and Detroit, it is said, have been looking up a desirable location in Toledo for a rolling mill. The East Side Improvement Association of

Telodo has the matter in hand.

The Multiplex Concrete Machinery Company is a new incorporation for Toledo, Ohio, with a capital stock of \$25,000. The incorporators are Ritchie E. Teets, Alfred F. Seibert, G. A. Caldwell, Andrew Feilbach and W. R. Daw-

Government Purchases.

WASHINGTON, D. C., June 16, 1908.

The Bureau of Yards and Docks will receive bids until July 11 for installing a coal and ash handling plant at the navy yard at Philadelphia.

The Isthmian Canal Commission will receive bids until July 6, Circular No. 448, for electric motors and other sup-

The following bids were opened June 8, Circular No. 442, for machinery for the Isthmian Canal Commission:

The following bids were opened June 8, Circular No. 442, for machinery for the Isthmian Canal Commission:

Class 1.—One universal milling machine—Bidder 10, Becker-Brainard Milling Machine Company, Hyde Park, Mass., \$1086; 24, Brown & Sharpe Mfg. Company, Providence, R. I., \$1248 and 1400; 38, W. R. Colcord Machinery Company, St. Louis, Mo., \$925; 56, Fairbanks Company, New York, \$1227 and 1231; 60, Fox Bros. & Co., New York, \$998; 73, Handlan-Buck Mfg. Company, St. Louis, Mo., \$1064; 75, Hendey Machine Company, Torrington, Conn., \$1200; 99, Manning, Maxwell & Moore, New York, \$1184; 109, Motley, Green & Co., New York, \$1380; 121, Niles-Bement-Pond Company, New York, \$1181; 124, Osterlein Machine Company, New Orleans, La., \$1255; 137, Prentiss Tool & Supply Company, New York, \$1213; 147, C. E. Robidoux, St. Louis, Mo., \$1060; 175, Vandyck-Churchill Company, New York, \$1200.

Class 2.—One universal radial drill—Bidder 38, W. R. Colcord Machinery Company, St. Louis, Mo., \$1460; 175, Vandyck-Churchill Company, New York, \$1618 and \$1559; 61, Frevert Machinery Company, New York, \$1618 and \$1570; 73, Handlan-Buck Mfg. Company, St. Louis, Mo., \$1498; 99, Manning, Maxwell & Moore, New York, \$1815 and \$1855; 133, C. T. Patterson Company, New York, \$1815 and \$1854; 121, Niles-Bement-Pond Company, New York, \$1815 and \$1855; 133, C. T. Patterson Company, New York, \$1815 and \$1855; 133, C. T. Patterson Company, New York, \$1815 and \$1855; 133, C. T. Patterson Company, New York, \$1815 and \$1855; 135, C. Robidoux, St. Louis, Mo., \$1494; 147, C. E. Robidoux, St. Louis, Mo., \$1725; 175, Vandyck-Churchill Company, New York, \$1867; 99, Manning, Maxwell & Moore, New York, \$1838 and \$1942; 147, C. E. Robidoux, St. Louis, Mo., \$1494; 175, Vandyck-Churchill Company, New York, \$1607; 99, Manning, Maxwell & Moore, New York, \$1890; 100, \$100,

Frevert Machinery Company, New York, \$687; 82. International Electric & Engineering Company, New York, \$806; 92. Landis Machine Company, Waynesboro, Pa., \$700 and \$744; 99, Manning, Maxwell & Moore, New York, \$647 and \$742; 133, C. T. Patterson Company, New Orleans, La., \$795; 137, Prentiss Tool & Supply Company, New York, \$6473; 147, C. E. Robidoux, St. Louis, Mo., \$815; 175, Vandyck-Churchill Company, New York, \$632; 1476.

S843. Class 5.—One elevating crank pin and small wheel press—Bidder 51, Drew Machinery Agency, Manchester, N. H., \$630; 60, Fox Bros. & Co., New York, \$419 and \$444; 99, Manning, Maxwell & Moore, New York, \$408 and \$437; 149, H. A. Rogers Company, New York, \$587; 175, Vandyck-Churchill Company,

Class 5.—One elevating crank pin and small wheel press—Bidder 51. Drew Machinery Agency, Manchester, N. H., 8630; 60, Fox Bros. & Co., New York, \$408 and \$437; 149, H. A. Rogers (New York, \$577).

Class 6.—One power back saw—Bidder 38, W. R. Colcord Machinery Company, St. Louis, Mo., \$17.25; 56, Fairbanks Company, New York, \$250; 00 pmany, New York, \$25; 56, Fairbanks Company, New York, \$22; 60 Fox Bros. & Co., New York, \$17.95; 61 Freenthinery Company, New York, \$20; 99, Manning, Maxwell & Moore, New York, \$20; 199, Motley, Green & Co., New York, \$29; 137, Frentiss Tool & Supply Company, New York, \$29; 137, Frentiss Tool & Supply Company, New York, \$29; 137, Frentiss Tool & Supply Company, New York, \$29; 137, Frentiss Tool & Supply Company, New York, \$17.25; 147, C. E. Robidoux, St. Louis, Mo., \$26; 1175, Vandyck-Churchill Company, New York, \$24; 187, J. B. Kendall, Washington, D. C., \$28.

Class 7.—One cold saw—Bidder 60, Fox Bros. & Co., New York, \$133; 82, International Electric & Engineering Company, New York, \$1230; 99, Manning, Maxwell & Moore, New York, \$1673; 140, Quincy, Manchester, Sargent Company, Plainfield, N., \$970 and \$1240; 167, L. W. Swind, Philadelphia, Pa., \$975; 175, Vandyck-Churchill Company, New York, \$935.

Class 8.—One engine lather—Bidder 38, W. R. Colcord Machinery Company, St. Louis, Mo., \$887; \$932 and \$995; 56, Fairbanks Company, New York, \$830; 60, Fox Bros. & Co., New York, \$783; 61, Frevert Machinery Company, \$835; 73, Handan-Buck Mfg. Company, New York, \$935; 121, Niles-Bement-Pond Company, New York, \$787; 121, Niles-Bement-Pond Company, New York, \$851; 131, Frentiss Tool & Supply Company, New York, \$571; 135, C. Patterson Company, New York, \$571; 136, C. Patterson Company, New York, \$571; 137, Vandyck-Churchill Company, New York, \$585; 147, C. E. Robidoux, R. E. Colcord Machinery Company, St. Louis, Mo., \$747; 75, Hendey Machiner Company, New York, \$77; 121, Niles-Bement-Pond Company, New York, \$571; 136, C. Patterson Company, New York, \$571; 131, St. Patterson Company, New Yo

The following bids were opened June 6 for installing one 5000 cu. ft. air compressor and accessories at the navy yard, Bremerton, Wash.:

Sullivan Machinery Company, Chicago, Ill., \$40,877; Laid-law-Dunn-Gordon Company, New York, \$27,100; Nordberg Mfg. Company, Milwaukee, Wis., \$35,296; Allis-Chalmers Company, Milwaukee, Wis., \$44,325 and \$42,075; Ingersoll-Rand Company, New York, \$28,974.

The following bids were opened June 9 for supplies for the navy yards:

Class 63.—One band saw—Bidder 4, American Woodworking Machinery Company, Rochester, N. Y., \$490; 66, Frevert Machinery Company, New York, \$383; 67, Fox Machine Company, Grand Rapids, Mich., \$444; 73, J. A. Fay & Egan Company, Cincinnati, Ohio, \$547; 85, Greaves, Klusman & Co., Cincinnati, Ohio, \$494 and \$383; 118, Manning, Maxwell & Moore, New York, \$390; 140, Oliver Machinery Company, New York, \$562 and \$512.

Class 71.—One motor driven grinder—Bidder 66, Frevert Machinery Company, New York, \$364; 71, Fairbanks Company, New York, \$370; 138, Northern Electrical Mfg. Company, Madison, Wis., \$386; 187, Vandyck-Churchill Company, New York, \$382.

Under bids opened June 2 for machinery for the navy

yards the Burke Electric Company, Eric, Pa., has been awarded class 21, two electric motors, \$1501.

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened June 2, Circular No. 441:

Henry R. Worthington, New York, class 2, two duplex water pumps, \$728.98.

Manning, Maxwell & Moore, New York, class 5, one power hammer, 8660.

G. & W. Mfg. Co., New York, class 6, one interchangeable crane and buggy general ladle, \$213.

Hanna Engineering Works, Chicago, Ill., class 7, one large pneumatic sand shaker, \$180.

Time for depositing securities of the Southern Steel Company under the reorganization plan of May 15 has been extended to July 1.

HARDWARE

THE stress of competition and the consequent call for ingenuity and invention and for the adoption of the best methods are influences which have contributed greatly to the extraordinary development of American manufacturing interests which has been characteristic of recent years. It has been a long, hard battle, every step of which has been attended by its own peculiar difficulties. In the early days when the profits were proportionately large the volume of business was usually correspondingly small. When, however, there was progress all along the line competition became greatly intensified, and the narrowing of the margin of profit was the inevitable result. In this condition of affairs there were those who were unable to realize that the old condition of things was gone forever and that a new order, presenting new problems, had been entered upon. Under these circumstances many successful men, some of them pioneers in their particular lines of business, mercantile or manufacturing, were unwilling or unable to adapt. themselves to the new conditions. There were, however, others, often younger men, who promptly met the changed situation and the new tendencies, and set about to find some means of making the best of the state of affairs which the evolution of industry and commerce had produced. There was thus in the recognition of the difficulties which had developed the beginning of a new progress in manufacturing.

Industrial enterprise under the stress of necessity was thus able to meet the requirements of the situation with eminent success. The result is seen in the great and varied industries which have been established, the fortunes which have been accumulated and the proud position attained by this country as a great manufacturing nation. The manufacturer first of all naturally looked about for means of reducing the cost of producing his goods and at the same time of increasing the volume of his output. He began to improve his methods of manufacture by the invention and installation of automatic machinery and labor saving devices. In connection with this there has been more gradually introduced a most careful regard for economies which though concerned about trifles have had in the last analysis much to do with the diminished cost of the manufactured products.

With these improvements in the making of the goods there was also the general adoption of better business methods in the factory. It was brought home to the manufacturer that he could not as in former days assume the direct oversight of everything himself. many cases the head of an enterprise was financier, superintendent, buyer, salesman, correspondent, all in one. This was not only too strenuous, but it was not efficient management. The changed conditions emphasized the necessity for a complete business organization. Good men suitable for the positions of responsibility which they were needed to fill were found, who being educated in accordance with the manufacturer's methods and plans relieved him of the burden of detail, while at the same time he retained a supervision which enabled him to keep in touch with everything in the factory. There was thus introduced little by little the installment of complete cost systems and the adoption of accounting methods which kept him informed as to what was done

in every department. He was thus given information, not only as to the profit of the business as a whole, but as to the profit realized in each department and if need be on each separate article manufactured.

Notwithstanding the progress which has been made one would have a short memory and be blind to the signs of the times who supposes that the end has been reached. The conditions which have recently developed are in some respects different from those which have characterized any former period in our industrial history. New problems are coming up and new difficulties are being encountered. There is thus a summons to a renewed enterprise and energy and the adoption of better, perhaps novel methods. There is little doubt that our manufacturers who have achieved so much in the past will be equal to the demands made upon them. These expectations, however, will be realized only as each manufacturer sees to it that his own business is conducted on the wisest lines and the traditions of the past departed from in so far as improved methods can be adopted. The present period of relaxed business and accumulating stocks may thus serve a good purpose.

Condition of Trade.

The present month maintains its reputation as one when business is of moderate volume and beginning to feel the effect of the summer quiet. It is indeed going well beyond recent Junes in this respect, making in some ways a new record of sluggish movement of goods and limited placing of orders. To this state of things the uncertainty in regard to the values of Hardware products contributes not a little. Jobbers are not only buying very carefully and in only such quantities as cover their requirements, but many of them are advising their customers to pursue the same policy, deeming it the part of wisdom to sacrifice present sales rather than load up the merchants with goods in excess of their needs, and which might decline upon their shelves. There is, indeed, on the part of intelligent merchants the general recognition of the wisdom of this course, and stocks, as a rule, are being kept small. While it would be gratifying to be able to report a quickened demand there is no doubt that the conservative policy followed so generally by both wholesale and retail merchants, as well as by the manufacturers in the purchase of material and the making of goods, is giving an excellent preparation for a return to a normal demand and better conditions. The recent reduction in heavy material and in Wire Nails and Wire is taken by the trade as indicating the increased probability of the establishment for a time at least of a somewhat lower level of prices. The reduction in Ore, while not having so immediate an effect on finished products, is an element in the situation which is also t be taken into account. It should, however, be borne in mind that the decline in general Hardware and the finished products is not likely to be radical or sudden, and the merchants are, therefore, justified in keeping stocks well assorted so as to be able to take care of current business. There is apparently more danger of excessive caution in buying than of overpurchasing. A fact, the importance of which can hardly be overestimated, is the splendid promise of the crops.

St. Louis.

Norvell-Shapleigh Hardware Company.—So prices on Nails and Wire go down 10 cents after all. The news came to the trinity of hardware conventions at Hot Springs, Ark. It was received with a good deal of surprise. The general opinion expressed was that the reduction of 10 cents will not do any good. The trade will expect another reduction in the near future. Therefore buyers will continue to hold off.

We remember the time when Mr. Gates locked up the Board of Directors and reduced prices \$1. We will not analyze his motives, but the effect was good. Everybody knew bottom had been reached. The trade of course were stunned. When they recovered they commenced buying.

To one outside of the sanctuary the recent decline looks like a wavering and uncertain policy—probably a compromise measure.

It has rained so much in this immediate section it is hard to understand how a farmer could do any plowing. Nevertheless our salesmen's crop reports are generally of a very encouraging nature. Passing through Arkansas the writer saw some excellent fields of corn. The plant was a strong, dark green, with a good stand, and well cleaned.

The rivers in this section are all up and the low lands are flooded. But after all, these low-lying farms and plantations, in area, are a very small part of the whole. Crops on the high lands are all reported to be in good condition.

Fortunately for us, like ancient Rome, St. Louis sits on her seven hills. Therefore we are dry notwith-standing the moisture all around us. Our freight service is never seriously interrupted by high water.

May was a poor month with us. Business so far in June is very much better. Orders are more "meaty."

A well-informed Texas jobber told me at Hot Springs that this has been a year of liquidation in Texas. Everybody has been collecting. Both buying and selling have been relegated to the background. He states he expects a good, late fall business.

The Arkansas merchants were quite cheerful, and it is surprising how well business in Arkansas has held up during the recent depression. While the bottom seems to have dropped out of things in Texas, Arkansas merchants, judging by their purchases, have been doing a normal business.

Three Southern jobbers (Messrs. Barker of Lynchburg, Va., Sanford of Sherman, Texas, and Ireland of Greensboro, N. C.) addressed the Arkansas retailers' convention. Their addresses were along widely divergent lines. Each one was of remarkable excellence. Surely, eloquence grows with tropical luxuriance south of Mason and Dixon's line.

Mr. Moore, of Birmingham, set a new pace by his speech commending and defending the various trusts and combinations in the Hardware line.

Mr. Sanford's address was a strong argument in favor of the local jobber. It was not only well written but delivered in an attractive and forceful manner. We naturally take exceptions to the logic of his conclusions, but he surely made a telling address.

As the writer sat as an interested observer in the various conventions he could not help but meditate upon the advantages of these meetings.

Here were prominent manufacturers from the far East hob-nobbing with jobbers and retailers from the South and Southwest.

Here were retailers from small towns weighing the addresses and claims of the jobber who sells goods over a wide scope of country, and the local jobber who depends for his business upon his home trade.

Here was an expert in store arrangement outlining his plans to both jobbers and retail merchants.

Here was a representative of a Correspondence School of Salesmanship—an exponent of the higher education in the art of selling goods.

The convention halls were like forums where the various interests, through their orators, appealed to the critical intelligence of their audiences.

The writer was particularly glad to note that the appeals to sectionalism, so common in most Southern meetings, were almost but not quite absent. Being a Southerner and of Southern people, I may be permitted to say that the present and future opportunities of the South are too great for them to allow themselves to be narrowed by old-time local prejudices.

The great development of the next generation and of succeeding generations will be in the Southern and Southwestern States. These States have weighty problems before them. The men of these States must be as big as their opportunities.

Why poor people will live in the North when they can live in the South I must admit is past my understanding. The South is the country of all countries for poor people. The negro is there waiting to serve them.

Times are going to change. Things are going to be different in the South.

Recently in New York a friend of mine, who has grown rich as a stockbroker, told me the secret of his success was to play everything in the North to win and everything in the South to lose. "Why, sir," said he, "look at the Northern and Southern railroads. What is the matter with my system?" I predict my New York friend will have to change his system or he will wind up in a Home for the Friendless.

Mr. Belding, ex-Mayor of Hot Springs, read a paper giving the resources of Arkansas, which were startling. He told not only of corn and cotton, but of the pre-eminence of Arkansas in the production of the apple. Of the strawberries and peaches that are shipped out of the State. Of lead, zinc, coal, gypsum and even gold. Of the pearls that are found in her rivers. Of course all we Hardwaremen know of the wonderful Arkansas Oilstone, but do we know that they have near Hot Springs a mountain of clay that can be used in the manufacture of pottery without any other preparation except the addition of water?

The tremendous resources of some of these Southern States have never been made known to the world. Horace Greeley once said, "Young man go West." The young men did go West and have built up empires. If Horace Greeley were living to-day he would say, "Young man go South." There new empires await you that will rival the conquests of Cortes and Pizarro.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—There has been but little change in the last few weeks in business to report. The demand for goods has continued steady and has been fully up to expectations. The trade is buying only for actual wants and the orders average some smaller than usual and mail orders especially are correspondingly more frequent, and, indeed, are making a remarkably good showing.

Less rain and more sunshine would help business to some extent and yet upon the whole crop conditions are still very favorable, notwithstanding there is too much water in some sections, and especially in the low lands.

Montana and Washington are now having the usual June floods, which have been of unusual violence this season. Country roads must necessarily be in bad shape and the railroads have suffered largely, both passenger and freight service having been greatly disturbed. The worst now appears to be over and things will probably soon be in about normal condition.

Change in prices have been made in a number of lines of goods, but generally they have not been heavy and business has not been greatly interfered with.

The long expected decline in prices of nails and wire has at last come. Its effect on the trade had already been largely discounted and probably will cause no disturbance of consequence.

Prices in general are coming to the lower levels that are necessary in some lines with as little disturbance in the readjustment as can be expected.

If crops come on nearly as well as they now promise a good Fall trade may be expected, notwithstanding political and other disturbances. Prices of farmers' products will be affected to some extent by foreign crops and markets, but, let the latter be unfavorable as they may be, reasonably good prices may still be expected for most of our farmer's products. It looks now as if the American farmer is likely to stay in the saddle for some time ahead, and, if so, there will be a place somewhere for manufacturers and commercial men.

Louisville.

Belknap Hardware & Mfg. Company.—The all important matter of interest during the past week, and one which has called for more comment, not only in the trade papers, but also in the daily press, is the action of the steel companies in reducing products all along the line, beginning with billets from \$28 to \$25, \$3, passing through merchant pipe at \$4 off, going down the slide to wire nails at \$2 per ton, or 10 cents per keg.

It was a confession of the inevitable and came none too soon. Atlas holding up the earth must have felt something of the same relief, when he shifted the weight for a little while on to the shoulders of Hercules, as Hawthorne describes in his story of the Gorgon's Head. Shall we now win our golden apples from the Garden of Hesperides?

There is only one thing left undone which is more or less mystifying to the lay mind, and that is while billets are decapitated to the extent of \$3, steel rails are holding up, or are being held up to their higher uniform figure of \$28. Why not give the railroads a slice out of this water melon, and let them put in their telling tonnage at the inside figure of at most \$25? The low price made on rails some years ago was the one thing which attracted attention and buying once started on such a scale as had never been seen. That was what put under way the great industrial movement and continued down through the following years, rolling with immense increment like the snowball of our youth.

It seems rather rough that the railroads should be held up to recognized excess prices just because the sellers believe that with the help of the tariff they can This condition furnishes the strongest argument in regard to the reduction of tariff and the policy may be pursued too far. They will be well employed this season and the idle cars, concerning which so much has been said, will start moving, for we have had abundant rain and are now enjoying warm, proper sunshine, so that the rows in the gardens and fields are vieing with each other in rapid growth, and unless all signs fail us, we shall soon have the realization of the promised bumper crop. There is, of course, no reason to look for immediate large buying. Farmers are busy in the fields and need all of the help they can get to plow and cultivate the soil.

Wheat fields look ready for the harvest hereabouts, and we shall soon be hearing from the mowing machine as it passes by down the hillside or over level field. Whether with all of the good reasons here given why we should have excellent trade, we are going to have it, the deponent sayeth not. It depends upon whether the people feel voluminously disposd. They are certainly able to get along with a smaller supply of goods than seemed possible a year ago. We believe they are rehandling their old axes and hatchets; they are reshaping their battered tools at the blacksmith's forge, and they rather enjoy making their old clothes last yet another season. It is simply the swing of the pendulum. For a time we like to spend freely and then we like to save, and the following years that come in between are apparently necessary to our business life. It certainly gives us something to think about.

Meantime the nation is growing and there is a new lot of young people with unsatisfied wants coming along. These we shall have to provide for in the course of time unquestionably.

Cleveland.

THE W. BINGHAM COMPANY.—It is a well known fact that consumption of commodities is the greatest factor and help to stimulate trade in all branches. It also is true that our country is so rich and prosperous in all agricultural lines that business is normally good in most

all directions. Manufacturing plants that were partially closed down and the output curtailed, are beginning to resume operations at quite a lively gait.

It is said that Henry Disston & Sons during all the depression did not curtail their output very much if any, simply caught up on old orders, and they retained all their employees, and have been working, as they are now steadily five and a half days each week. They had very large orders for their goods last Fall that they were unable to fill promptly, now they are accumulating stock so as to be ready for the jobbers' and retailers' requirements during the summer and Fall.

Orders are coming to us now in a fair volume, and we confidently believe after July, when the turmoil of Republican and Democratic nominations is over, business men will discount the future, and our great and glorious country generally will settle down, and our business the last six months of this year will be much larger than it was the first six months. We have every reason to be hopeful of the future. Everything in the way of crops, confidence, stability and influence of the clear headed business men, who are really the mainstay of the country, all point to a return of prosperity. We are encouraged greatly by the volume and size of orders that are coming to us at this time of the year from many sources.

A little more confidence among moneyed men will open up their coffers, and the railroads and manufacturers will resume buying, and peace and plenty will be our lot in the near future. We do not see any dark clouds on the horizon to bring about opposite results.

Our semiannual meeting with our salesmen is near at hand, and we expect our plans will result in renewed energy for the midsummer and Fall campaign.

Owing to the dry weather that we have had in this section, it has made a very large sale on lawn hose, sprinklers, reels and accessories.

A short time ago, you will remember, the U. S. Steel Corporation declared their intention not to make any change in the price of their commodities, but for reasons best known to themselves, a short time afterward, they did lower the price on structural and bar steel, and new prices are now announced on wire and nails and wrought steel and iron merchant pipe, and it has made the dealers a little skittish about placing orders on other lines. Now that the deed is done and we know what the price is to be we are expecting a larger volume of business on these lines of goods.

When we talk about consumption it is gratifying to know that the United States of America is so prosperous that they can consume the largest amount of luxuries of any nation on the globe. It is reported that in 1907 the world's consumption of coffee was 16,825,000 sacks, of which 6,980,000 were consumed in the United States, more than one third of the whole amount; twice as much as Germany; six times as much as France, and more than all the balance of the other countries, consumed. Surely we are great people in this U. S. A. that can and do spend so much money for one of our most delicious elixirs.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—June is considered in this section the dullest month of the year in the Hardware business, and it is not proving an exception this year. Many jobbers are taking advantage of this dull month to take inventory, and see the result of the unsettled business conditions for the past six or eight months.

Business at the present time is unsatisfactory, but prospects for future business based on the condition of the country and the purchasing power of the people of the South seem favorable. The crop prospects, taken as a whole throughout the South are far better than they were in 1907, and we made a pretty good crop in 1907.

If we make a good crop there is certainly no local reason why we should not have a good trade, though we must admit we had every reason to expect a good business during the past seven months, but for some reason not easy to locate trade has been unsatisfactory.

We hope before many months to see a full "dinner pail" again.

Philadelphia.

Supplied Hardware Company,—Financial conditions as well as trade conditions have improved in various departments during the last 30 days. Manufacturers of various kinds of goods throughout the country are starting up, and the Government's estimate for the products of the country is in excess of last year, and far in excess of the average for the last 10 years. Money that was withdrawn from banks during the Wall Street crisis has gradually been redeposited, and the banks generally in large cities have loaned to manufacturers at less rates than were paid one year ago, having in view the prospects for trade throughout the country in the fall. At the present time everything looks encouraging for the fall trade, which we look to begin within the next two months.

NOTES ON PRICES.

Wire Nails.—There has been no pronounced increase in demand as a result of the reduction of \$2 per ton in the price of Wire Nails and Wire. The disinclination shown by jobbers to stock up beyond immediate requirements reflects a moderate demand from their customers and their own conviction that the decline in price has not put the market on a firm basis and justifies them in anticipating their needs to any considerable extent. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

New York.—City demand continues in about the same moderate volume as for some time, but orders from nearby territory show some increase in volume. Nails are being held on the basis of \$2.40, in small lots at store, with occasional concessions of 5 to 10 cents per keg.

Chicago.—Realization of the anticipated reduction in the price of Wire Nails has not been followed by an immediate stimulation of demand. Whether buyers regard the decline of 10 cents a keg as inadequate and prefer to await further developments, or are merely disinterested at the present time because of light consumptive demand, is not yet apparent. It is plainly evident, however, that the announcement of the new price schedule has evoked no enthusiastic interest. Interviews with a number of jobbers as to their attitude respecting future purchases elicited the uniform declaration that they saw no reason at this time for buying for other than current requirements. Revised quotations are as follows: \$2.13, in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh,-As announced last week, prices on Wire products have been reduced \$2 a ton, the new price on Wire Nails being \$1.95 in carloads and larger lots, to jobbers. For some time the trade has been holding up orders, fully believing a reduction would be made, and as soon as it was announced, a fair amount of new business was placed, made up mostly, however, of small lots, the trade still pursuing the policy of buying only for actual needs. Opinion is divided as to whether a larger reduction should have been made, and the situation is still characterized by a waiting attitude on the part of buyers. It is not likely the situation will change much for some little time, and it is probable jobbers will continue the policy of placing only such orders as are needed to replenish stocks. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Cut Nails.—The Cut Nail market has felt the reduction in the price of Wire Nails, this being shown in a weakening of prices. Orders from jobbers cover only actual requirements, which are small. The price for Steel Nails at mill is reported to be a \$1.75 base, with the probability that it would be shaded for desirable orders, small lots being held at \$1.80 to \$1.85, base, at mill. For Iron Cut Nails about \$1.80, base, is being quoted at mill.

New York.—Local demand continues moderate and small lots fill the requirements of buyers. Cut Nails are held on the basis of \$2.15 per keg for small lots at store.

Chicago.—Cut Nail orders comprise only actual present needs, which are extremely meager. Prospects for immediate improvement in demand are not at all encouraging, as this must of necessity await a renewal of activities in building, car repair work and new car construction. Prices are irregular. Chicago quotations are nominally as follows: In car lots to jobbers, Iron Cut Nails, \$2.18; Steel, \$2.03; in small lots from store, Iron Cut Nails, \$2.30; Steel, \$2.15.

Pittsburgh.—Following the reduction of 10 cents a keg in Wire Nails, prices of Cut Nails have declined to about the same extent, but as yet demand does not show any betterment. Jobbers are placing orders only for actual needs, and the amount of new business going to the mills is very small. We quote Steel Cut Nails at \$1.75, at mill, but on a desirable order this price could be shaded. Small lots are held at \$1.80 to \$1.85, at mill. Iron Cut Nails are quoted at about \$1.80. at mill.

Barb Wire.—It was not generally anticipated that the reduction of 10 cents per 100 lb. in the price of Barb Wire would stimulate demand to any great extent, owing to the lateness of the season. The policy of buying in small lots will probably be continued, at least, for the present. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| Painted | Gal | Section | Section

Chicago.—Not much is expected in the way of new orders at this season of the year, and the fact that none of consequence is being entered is not particularly discouraging. It was hardly expected that last week's reduction of 10 cents per 100 lb. would result in an immediate quickening of business, so that the results are in this respect not disappointing. Prices revised in accordance with the new schedule are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The reduction of \$2 a ton in prices as yet has not stimulated demand to any extent, nor was this expected, as the season is about over and a new buying movement is not expected in the near future. The trade will probably continue the policy of buying in small lots for actual needs, until it is more fully demonstrated whether there will be any further reduction in prices.

Plain Wire.—Some business has evidently been held back in anticipation of lower prices, as demand has been stimulated to some extent since the reduction of 10 cents per 100 lb. on June 10. The mills are looking forward to a moderate volume of business for some time. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos......6 to 9 10 11 12&12½13 14 15 16 Annealed......\$1.80 1.85 1.90 1.95 2.05 2.15 2.25 2.35 Galvanized..... 2.10 2.15 2.20 2.25 2.35 2.45 2.85 2.95

Chicago.—So far as demand is concerned, there is no change observable as a result of reduced prices. Manufacturers are not hastening to cover future requirements on the new basis, but seem content to order in quantities required for nearby needs. Prices are herewith revised on a basis of 10 cents per 100 lb. reduction from previous quotations. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—The reduction of \$2 a ton announced by the mills last week has stimulated demand for Fence Wire to some extent, as a large number of orders have been held up waiting for the lower prices to be announced, and considerable of this business has been placed. The mills expect a moderate demand from this time forward, but do not look for heavy business, as the trade will likely continue the policy of placing orders only for actual needs, which policy has been followed for some time past.

Sledges, Picks and Mattocks, Crowbars, Etc.—The market on heavy tools is commanding the attention of buyers who have been looking for a possible reflection of the decline in steel. It is asserted, however, that these lines have been selling on a level that discounted a moderate reduction in raw material and that further concessions of any account are unlikely for the present.

Steam and Water Brass Goods.—There are some indications of a slight stiffening tendency in the market for Steam and Water Brass Goods, including Cocks, Bibbs, Valves, &c. Some low quotations of a special character have been withdrawn, and manufacturers show little disposition to book a large amount of business at ruling prices.

Dripping Pans.—Quotations on Dripping Pans show a slight tendency to wavering. Concessions are not general or important, but buyers are inclined to watch the market carefully, especially as this line has been maintained at a fairly high level, as compared with the course of the general market.

Window Glass .- There is little new to be said in addition to the comprehensive report of the condition of the Window Glass market given in our last issue. Quietness has been a prominent feature during the past week, with both manufacturers and jobbers. Two factories in the East are reported as having gone out of blast and it is understood that only about one-third of the productive capacity in the Kansas territory is being operated. As stated last week, general quotations from jobbers' list are 90 and 30 per cent. discount on single and 90 and 40 per cent, discount on double strength Glass; while quotations of 90 and 30 and 10 to 90 and 40 and 5 per cent, discount on single and 90 and 40 to 90 and 40 and 10 per cent. discount on double strength have been made. From manufacturers' list general quotations are 90 and 40 per cent. discount on single, and 90 and 40 and 10 per cent. discount on double strength in carloads. Quotations have, however, been made of 90 and 40 per cent. to 90 and 40 and 5 per cent. discount on single and 90 and 40 and 10 to 90 and 50 per cent. discount on double strength. It should be borne in mind that the jobbers' list is about 25 per cent. higher than the manufacturers' list.

Binder Twine.—The reassuring Government crop report, with the prospect of the largest crop of oats and the second largest yield of wheat in the history of the country, and increases in the yield of other small grains, is an excellent reason for sustained prices of Binder Twine. As the greatest proportion of Twine required for the nearby harvest has been purchased from manufacturers and guaranties have expired, a firm market should be comparatively easy to sustain, as increased strength has been shown during the past week. Quotations continue as follows:

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Carload lots, ¼ cent less; 5-ton lots, ¼ cent less, central delivery, fall terms,

Rope.—Manufacturers report good days and bad days, the latter predominating, as indicating the character of the demand during the past weeks. Orders are usually for small quantities and represent only immediate requirements. The Hemp market is quiet and cordage manufacturers seem to have purchased all they require at present. Manila Hemp is quoted at 6½ cents for fair current shipment and Sisal at 5½ cents for shipment. The Rope market is not very firm at the following quotations: Pure Manila, 10 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼-in. and up, 5½ cents; No. 2 Jute, ¼-in. and up, 5½ cents.

Linseed Oil.—The demand for small lots continues moderate, but orders are frequent, and in the aggregate amount to quite a fair business, considering general conditions. A limited amount of business is being done in carload lots for delivery through July. The price of flaxseed fluctuates from day to day without, however, affecting the price for small lots of oil. Local quotations are as follows: State and Western Raw, 42 to 44 cents; City Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—While the net results of fluctuations during the week have been a decline of ½-cent per gallon in this market, the Savannah price has not gone below 40 cents. This is regarded by some as reflecting the stability of Turpentine conditions. The demand at this point has been steady, but only for jobbing lots, showing the disinclination to accumulate stock beyond immediate requirements. The New York market is represented by the following quotations: Oil Barrels, 43 to 43½ cents; Machine Made Barrels, 43½ to 44 cents.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

From Holder-Athey Hardware Company, Bloomington. Ill., which is about adding to its line steam and hot water heating.

FROM TAYLOR BROS., who have been incorporated with a capital stock of \$5000 to succeed the Enumciaw Hardware Company in Enumciaw, Wash. The stock has been moved to a new location and Harness added to the former lines—including Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

From Uniontown Hardware & Supply Company, Uniontown, Pa., which handles general Hardware, Mine, Mill, Plumbers' and Steam Supplies.

From Harper Hardware Company, Chester, Pa., which has been organized, with a capital of \$20,000, to succeed Paiste-Harper Hardware Company, with the following officers: J. M. Harper, president and treasurer; A. Hodge, secretary, and W. F. Hargrove, manager. The company wishes catalogues of Hardware, Foundry and Mill Supplies.

From Owensboro Hardware & Iron Company, Owensboro, Ky., a concern representing the wholesale interests of W. A. Guenther & Sons, which has been incorporated with a capital of \$125,000. The company handles a wholesale stock of Shelf and Heavy Hardware, Stoves, Paints, Sporting Goods, Harness, Mine and Railroad Supplies, Building Materials, Wagon Wood Stock, &c.

From I. P. Reese, Lancaster, Pa., for some years a traveler in the East for Simmons Hardware Co., who is about to open a new Hardware and House Furnishing Goods store.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is prepared to supply to the trade a varied and attractive assortment of Stevens advertising material, consisting of recently issued abridged catalogues, part envelopes, pamphlets, illustrating targets, circulars for mailing and for counter distribution, single and double column mortised electrotypes featuring hunting scenes, cuts of different models, &c. The company will furnish these supplies gratis to Hardware and Sporting Goods merchants who will pay transportation charges.

The John S. Solenberger & Co., Inc., has been organized with a capital of \$30,000 to conduct a general Hardware business in Winchester, Va.

Local Advertising by Window Display.

THE value of striking window displays as a means of local advertising appeals with increasing force to the Hardware trade, and much attention is being given to the designing of effective show window arrangements. Formerly it was thought that Hardware stocks were of too prosaic character to be used effectively in window dressing, but in later days it has been abundantly demonstrated that one need not go outside the ordinary goods

broidery and small Scissors, Leather Knife Pockets, Paring Knife, Sabatier Knives, large and small Shears, &c.

Movable Stand for Displaying Vises.

ASPER & KOETZLE, 565 Bushwick avenue, Brooklyn, N. Y., have devised the convenient stand shown in the accompanying illustration for displaying Vises. The stand is about 4 ft. high, strongly constructed, having two shelves to which the Vises may be attached. The

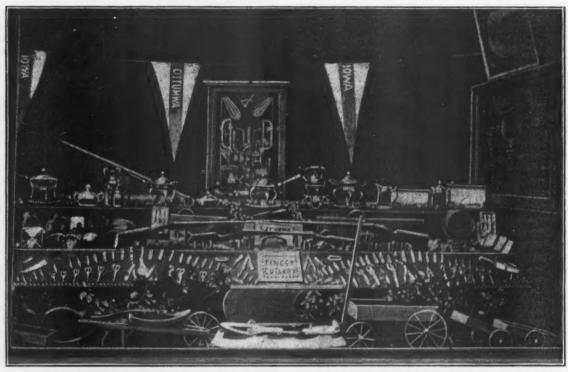


Fig 1.-Local Advertising by Window Display.

composed in the average stock of a Hardware store to find material that if properly arranged will arrest attention as quickly as the artistic drapings seen in dry goods windows. The accompanying illustration shows a window designed and set up by the clerks of the Ottumwa Hardware Company, Ottumwa, Iowa, and the entire expense involved in its preparation did not exceed \$5.

Fig. 2 shows a cross section of the display stand frame, which was built to facilitate the arrangement of

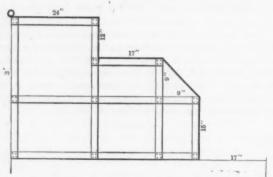
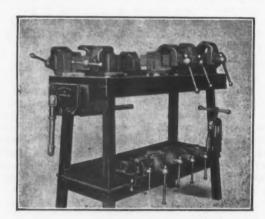


Fig. 2 .- Skeleton Frame for Display Stand.

articles, and may offer suggestions that will be helpful to other merchants. The display was made up of the following articles, taken from the company's regular stock: Chafing Dishes, Trays, Baking Dishes, Five o'Clock Teas, Tea Pot, Coffee Pots, Sets of Carvers, Nickel Plated Pitcher, Gun Cases, Shell Belts, Shotguns, Rifle, Air Gun, Revolvers, Baseball Mask, Catcher's Mit, Wrist Supports, Decoy Ducks, Baseball Gloves, Child's Set, Baseball Cap, Childs' Carts, Baseballs, Boxes of Cartridges and Shells, Whistles, Punching Bag, Foot Ball, Boxing Gloves, Skates, Razors, Barbers' Shears, Lather Brushes, cakes of Shaving Soap, Scissors, Pocket Knives, Boys' Wagons, Boys' Wheelbarrows, Pearl Handle Nail File, Pearl Handle Manicure Knife, Pocket Shears, Manicure, Em-

firm carry a large stock of these goods and display a complete assortment of samples set up ready for use. A feature of the stand is that it is on casters and, in spite of



Vises Displayed on Movable Stand.

its weight when loaded, may easily be moved around as desired.

Ross Hardware & Supply Company, Grand Junction, Colo., has been incorporated with a capital of \$15,000, to conduct a retail business in Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

Gardner Hardware Company, Hillsdale, Mich., has been incorporated with a capital of \$10,000 to deal in Shelf and Heavy Hardware, Stoves, Tinware, Implements and Sporting Goods.

The Jenkins-McKay Hardware Company, Central City, Colo., has been incorporated for \$35,000 to deal in Shelf and Heavy Hardware, Stoves, Paints, Sporting Goods and Mining Supplies.

Death of Jonathan S. Haselton.

ONATHAN S. HASELTON, a leading citizen and prominent manufacturer of Rome, N. Y., died of pneumonia on Monday, 14th inst., after an illness extending over about a month. He was in his sixty-first year. He was born in Lawrence, Mass., going to Rome when very young. He became president of the Rome Brass & Copper Company, and is said to have been entirely responsible for the upbuilding of the following affiliated companies, in which, including the parent company, he owned a controlling interest: Rome Metal Company, Rome Tube Company and Rome Tack & Nail Company. He was a man of great executive ability and high character, and greatly esteemed by business and social associates. Recently he presented to the Baptist Church an expensive chime of 10 bells in memory of his mother, which were rung for the first time on Memorial Day. He is survived by a widow, one son and two daughters.

DEPARTMENT STORE RECORDS OF SALES.

BY CLARFIELD.

I may be interesting to Hardware merchants to know how sales records are kept and made and met by the managers and proprietors of the large department stores where the accounts of the various departments are segregated and details are watched with much greater care than is usual in a retail store of smaller proportions. It possibly may not be generally known that the management of these great enterprises has constantly accessible in tabulated form the dally sales record of every separate department for every business day of the concern's existence. These records are referred to as a basis upon which to judge and arrange current plans and operations. It is always the aim and endeavor of the executive staff to surpass all previous records.

Sales Totals Known Some Day.

In these great stores, despite the enormous volume of business, the total sales of each day are accurately known at the end of the day, and each department chief knows with the same accuracy the separate result of the day's selling in his own department. Of course, the total results for the entire store are known from the cashier's report of his day's receipts, but the various department managers learn their amounts by footing up the amounts shown in the individual sales books in their department. The actual balance is found in the auditing department, where a large force is constantly kept busy sorting and footing up the sales checks and tabulating the results.

Triplicate Check System.

Some concerns use a duplicate check system, but the one probably most in vogue is the triplicate sales check book, which provides an original and two carbon copies. In this system the original goes to the cashier and verifles the amount of the sale, the second goes to the packer as his voucher for sending out the goods which will bear his number, and the third goes into the parcel for the customer, and always proves valuable when some subsequent adjustment is required. The first and second check then go to the auditing department where they are filed after having been sorted, footed with others and checked. These two show a complete record of the sale, as they carry a serial number of the transaction as well as the numbers of the salesman and packer, and if the sale happened to be of unusual or special nature they will also show the floor manager's or superintendent's signature. It is thus comparatively an easy matter to trace all transactions and discover any irregularities.

The Tubulated Results.

Most general managers keep before them the daily results of the previous year, for from a week to a month in advance of the current year's date, in order that they may plan to strengthen the weak days and to eclipse the heavy ones. In addition to this, they have a tabulated book showing the daily results in each individual department, and they can readily see in which sections good or poor records have been made. In reference to the records of the separate departments, it might be well to explain

that these represent much smaller divisions than the average retail merchant might suppose. For instance, whereas the Hardwareman might believe that one department would represent nearly everything that he sells in his store, as a matter of fact the lines carried by the Hardware store usually represent several different departments in one of these large organizations. Carpenter's Tools, Housefurnishings, Paints, Cutlery, Silverware, Sporting Goods and other subdivisions are quite likely to be treated separately, and frequently will be found under the supervision of different buyers or managers. It will thus be seen that the Hardware merchant can subdivide his business upon the same plan if he desires, and it might prove the means of effectively increasing his business.

The Executive Staff.

Every man who has served in an executive capacity in one of these large stores knows the meaning of these tabulated results, and has experienced the nervous strain brought on by being confronted with them and being requested to overcome them. The firm, the merchandise manager and the advertising chief have almost daily conferences upon this subject, and every possible means is employed to push the business ahead, to keep the stocks clear of slow moving merchandise and to strengthen every weak point that can be found. The department manager is provided in advance with the previous daily sales of his respective section, but of course he does not know the results in other departments. He is also given the percentage of his profits, as related to his sales, and if he accomplishes big sales at the expense of his percentage, which he can easily do by cutting prices too liberally, he is sure to hear from the "inner office."

Department managers are often sent for and reminded that on a certain date they have unusually large records to meet, or that such a day the year previous was abnormally small, and that they will be expected to cooperate energetically with the merchandise and advertising managers to overcome these resords. This means "hustle," and woe to the man that fails!

In many large stores regular weekly or monthly meetings of the executive staff are held, with a member of the firm presiding. All sorts of general policies and propositions looking to the betterment of the business are discussed, and a great deal of good is usually accomplished.

GILES HUMPHREY ALFORD of G. H. Alford & Son, Willimantic, Conn., died June 7 of heart disease. He was born in Otis, Mass., April 18, 1827, and when of age, after preparation in Normal school, commenced to teach first in Massachusetts and afterward in Connecticut. In 1851 he entered commercial life as clerk for his uncle and later purchased a business in another line. He was in the Army of the Potomac in the early years of the Civil War, afterward returning to business life in Willimantic. He then became a traveling salesman for the Upson Nut Company, continuing for eight years, when he purchased a bankrupt hardware stock. He was a Mason for 50 years and since 1844 a member of the Congregational church, in which he was very active, having been a deacon for a long period. For his years Mr. Alford's vigor was remarkable, having been actively engaged daily in business until the last.

THE NATIONAL RIFLE ASSOCIATION OF AMERICA, which has had charge of the selection of ammunition for use by the American team in the International Olympic Rifle Match, to be shot at Bisley, England, next month, has chosen that made by the United States Cartridge Company, Lowell, Mass., for which the U. T. Hungerford Brass & Copper Company, New York, are the representatives. The committee in charge of the matter chose the 180 grain bullet cartridge.

C. M. Russell has resigned as president of the Vermont Hardware Company, successor to Holton Hardware Company, Burlington, Vt. D. R. Campbell, treasurer, and P. C. Russell also retire from the company, which has elected the following new officers: President, S. F. Henry; vice-president, A. E. Tryon; secretary, F. H. Prouty.

Orr & Lockett's "Red Book."

NEW edition of the "Red Book," a catalogue of manual training benches and tools published by the Orr & Lockett Hardware Company, Chicago, is just off the press and being distributed to the trade. said to be one of the most complete catalogues of tools and equipment required in manual training schools published in the country. It shows a great variety of hand tools, which includes a line of high grade Auger Bits, Hammers, Chisels and Gouges under the brand "Orlock,' the company's own distinctive mark. This brand, it is stated, will not be put upon any tools that cannot be guaranteed. One of the new features presented in this book is the "Orlock" Combination Cabinet, Work Bench and Tools, No. 50, shown on page 2. The Cabinet is especially designed for manual training instructors and others living in apartment houses where there is no work shop or place to set a bench. Another interesting feature is the Combination Bench and Lathe designed by Frank Henry Seldon, teacher of woodwork at the University of Chicago, for the use of instructors in woodwork and wood turning. The Bench is provided with eight tool drawers which have a lever locking device that prevents the scholar from entering any but his own drawer, while the teacher can remove any drawer desired in case it should stick or the pupil forget his key.

Old Guard Southern Hardware Salesmen.

A N event of collateral interest in connection with the Hot Springs conventions and one that foreshadows the successful fruition of a long contemplated purpose was the preliminary organization of the Old Guard Southern Hardware Salesmen. The leading spirits in this movement called a meeting at the Arlington Hotel on Wednesday, which was attended by a number of the veteran Southern salesmen, and after careful canvass of the plans outlined the following officers were elected: President, H. H. Beers; first vice-president, C. F. Forsyth; second vice-president, O. C. Mead; Secretary and treasurer, F. M. Higgins. Executive Committee: W. A. Chenoweth, D. K. Stucki, John Hoen, J. H. Gossett, John K. Wilson, F. S. Seeley and P. C. Cauthorn.

The next meeting of the society will be held at Memphis, Tenn, in November on dates coincident with those of the conventions of the National Hardware Association and American Hardware Manufacturers' Association at which time a constitution and by-laws will be adopted. The membership will be limited exclusively to salesmen who have been visiting the Southern jobbing Hardware trade for 15 years or more. The society will be largely social in its nature, but will afford a channel for co-operative effort along any line touching the interests of its membership.

THE HOT SPRINGS CONVENTIONS.

American Hardware Manufacturers' Association. Southern Hardware Jobbers' Association.

THIS year, for the first time in their history, a location west of the Mississippi River was chosen as a meeting place for the conventions of the Southern Hardware Jobbers' Association and the American Hardware Manufacturers' Association. And in selecting Hot Springs, Ark., as the scene of their deliberations June 9. 10 and 11, a fitting tribute was paid to the loyalty of Western members of both Associations, who for years have traveled to far Northern and Eastern cities to lend by their presence, aid and encouragement to the aims and purposes represented in the efforts of these assemblages. Following the announcement of their choice of cities it was decided by the Arkansas Retail Hardware Association to abandon an established precedent under which its annual conventions have for several years been regularly held in Little Rock, and meet on simultaneous dates with the two above named Associations at Hot Springs. The triple meetings which resulted, and of whose opening sessions a brief synopsis was given in The Iron Age of last week, combined to make the occasion one of notable interest.

The assembly halls provided for the business sessions of the conventions were admirably suited to the convenience and comfort of members. The retail merchants whose headquarters were at the Majestic Hotel held their meetings in the Majestic Opera House nearby, while the Arlington Hotel, at which the Manufacturers and Jobbers were quartered, provided suitable rooms within the building for both general and committee meetings.

Because of the length of journey involved for the majority of manufacturers and jobbers and the anticipation of encountering the discomforts of sultry weather, even the most sanguine and enthusiastic scarcely dared to predict anything more than a scattered and meager attendance. That such estimates failed to take account of the importance which in the minds and judgment of members of these bodies attaches to their annual and semiannual concourses was evident from the size of the gathering, about 150 names appearing on the registry of the manufacturers and upward of 100 on that of the jobbers.

Entertainment.

No dull moments were experienced by the members or guests of any of the three conventions during their stay

in Hot Springs. Had no formal plans for entertainment been made there were features of interest in abundance to be found in this wild region of the Ozark Mountains to occupy more time and attention than the casual visitor usually has at command; but the convention visitors were not left to their own resources. Beginning with a delightful reception and ball at the Arlington Hotel on Tuesday night, the entertainment furnished included a tally-ho ride up the winding government road to the top of the mountain from which the hot springs flow. A beautiful view of the city and surrounding country was enjoyed from this point. At 1 o'clock Thursday afternoon a "Burgoo" dinner was given by the Hardware jobbers of Arkansas at Whittington Park.

The delightful weather which prevailed during the three days of the convention lent especial attractiveness to the out-of-door entertainments. Morning horseback rides over the winding valley and hill roads of the mountains were indulged in by many of the convention visitors, who pronounced this enjoyable exercise one of the most pleasing features of their trip.

President Asbury's Address.

President C. W. Asbury of the Manufacturers' Association stated that as this was the semi-annual meeting of that body, his address would be merely in the nature of a report calculated to keep the members in touch with the work being done. He referred to a conference of employers held in New York City, and also to the meeting of the Atlantic Deeper Waterways Association, of which the association has become a member. He also stated that a conference had been held with a committee from the American Exporters' and Importers' Association of New York, relative to desired cooperation, which he was pleased to recommend. Referring to the convention of the National Retail Hardware Association, President Asbury said that the relations of the manufacturers with that body were most friendly and declared that fairness of spirit and action were the only requisites for continued cooperation and good will. A conference held with representatives of leading business associations by the Secretary of Commerce and Labor was given attention, showing the efforts of the administrative departments to get in closer current touch with the business world. As a result of this conference the National Council of Commerce has been organized, the question of affiliation by membership being submitted for action of the association. Mr. Asbury continued:

Cost Keeping Systems.

Your officers have not forgotten your instructions relative to continued attention to cash discount abuses, and to the encouragement of the installation of cost keeping systems among your members. You have been currently adwised by circular letter from the secretary's office, of the steps taken in these matters, and I can only add that your officers will keep themselves in position to willingly and actively pursue any course which you may outline. There have been quite a few of our members who have expressed an active interest in the matter of providing adequate cost keeping systems in their respective plants. Quite a few have adopted the suggestions made by this association, and I am confident they have done so with large advantage to themselves. This line of activity will be continued in the hope of removing some of the primary causes for destructive and disastrous competition in certain lines of Hardware. This kind of competition can best be controlled by knowledge. If actual costs can be determined by positive rule and method, instead of by estimate, these costs will naturally be a guide in making up selling prices. We especially invite correspondence with any of our members upon this subject, as we feel confident we can be of service.

Legislation and Tariff.

Your officers have found it advisable to keep in touch with general legislation at Washington, because it is naturally true that many bills are introduced into Congress at each session which affect the interests of manufacturers generally. Your officers have assumed the responsibility of using the influence of this association for or against legislation which might affect the membership favorably or unfavorably. It now appears as though a readjustment of schedules in the tariff will be effected shortly after the opening of the new Congress in March next. I recommend such steps as your wisdom will dictate to provide against disastrous alterations in these items which might affect your interests. This is a large work, and should be approached from the business viewpoint rather than from the political.

President Donnan's Address.

The address of President Donnan of the Southern Hardware Jobbers' Association embodied a thoughtful review of the financial and industrial events of the past year in the course of which he voiced the belief that never in the history of the Hardware associations has their work been so necessary and effective as within the past few months. It was pointed out that the influence of organized effort had been a powerful factor in stay-



C. W. ASBURY.



W. L. SANFORD.

ing hurtful demoralization which might otherwise have wrought havoc to business interests generally. In the course of his remarks, President Donnan said:

Need of Loyalty.

How can any association be fully effective without the loyalty of all its members? Each year the experience of every organization is that a few of its members are faithful, and by letters and suggestions to their executives help to carry the burden; but is this true of all?

A Year to Be Remembered.

The year through which we have just passed will long be remembered by every merchant and manufacturer of this country. The causes given for the panic are many. Some say the cause was overcapitalization; others want of confidence; others, governmental prosecution of trusts and State and Federal attacks upon railroads. Be this as it may, the

fact remains, we have passed through a terrible period and millions have been lost at a time when our country was on the top wave of prosperity, and when the United States Department of Commerce and Labor states that \$430,000,000 was the balance in our favor during 1906 in the increase of exports over imports. Our exports in 1907 exceeded those of 1906 by \$126,000,000. The national debt in 1907 was \$86,000,000 less than that of the previous year, being a reduction of \$1.20 per capita. In the production of cotton, corn, wheat, tobacco, coal, petroleum, pig iron, steel, copper and silver the United States led the world.

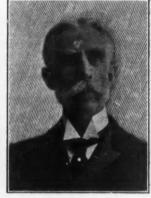
Currency Problems.

With a knowledge of these facts, surely something must be radically wrong with our currency system. If the stringency in our money market is caused by having to provide currency to handle 13,000,000 bales of cotton, in what condition will we be when the South doubles and trebles its cotton crop?

Necessity of Export Markets.

One of the greatest dangers to this country is its prosperity. With the cheapest fuel and raw material, modern





JOHN DONNAN.

F. S. KRETSINGER.

machinery and skilled workmen, we are able to produce far more than we can consume, and to prevent congestion, it is absolutely necessary that we should export our surplus, both of crops and manufactured goods. Have you realized that England, our largest customer, has not only in Egypt and the Soudan, but also in Uganda, in British East Africa, a country as large as Louisiana, Mississippi, Alabama, Georgia and South Carolina? Protected by Great Britain and backed by her millions, more cotton is produced and sold by the people of this territory than by any nation, except our own. The quality of cotton produced in that soil, from American seed, is equal, if not superior, to the same cotton grown in America; and the price paid for labor is 2 cents per pound for planting, harvesting and bringing to factory. Last year, 2,000,000 lb. were made, and during the current year 5,000,000 lb., which was ginned with the most modern machinery.

Interests of the South.

With the rapid development of the South both in agriculture and manufacture, and the prospect of our very best customer preparing to grow cotton in the land of her possession, we Southerners are vitally interested in the rapid construction of the Panama Canal, which, when completed, will not only give us easy access to the Western coast of South America, but put the markets of the Orient in direct connection with all of our South Atlantic and Gulf States.

The time has now arrived when the solution of the great questions confronting this country must not be left alone to lawyers and politicians to solve, but must be grappled with by the practical brains of the mercantile and manufacturing world; by men whose daily life not only brings them in contact with large affairs, but whose everyday experience with worldwide questions pre-eminently fits them for the task.

Foreign Born Population.

The distribution of immigrants as to numerical preponderance in the year 1906 was in the following order: New York, Pennsylvania, Illinois, Massachusetts, New Jersey and Ohio. It is a fact that two-thirds of the immigrants to this country settle in the Atlantic or Middle Western States, already thickly populated, and the proportion of foreign born to native population in many of the cities of that section has already become startling. Speaking generally we have 38 cities of over 1,000,000 population. Of these only 11 have a native element of over 50 per cent. I am glad the South is a homogeneous people. I believe the day will come when it will prove to this great republic a shelter in the time of storm. North and South Carolina have almost no foreign element. Georgia almost none; Mississippi but little; Virginia, Arkansas and Tennessee no significant admixture.

True, this is the land of the free, but may God save us

from being deluged with the riffraff and offscum and offscuring of South Europe; men who are members of the mafia; who consider license, liberty; men who have no reverence for and desecrate our Sabbath; men who are permeating this land with ideas of anarchy and polygamy—a class who are not only undermining the sanctity of our family life, but who will, if not restrained, in the future undermine the very foundations of our Government. These are some of the great and complex problems we are compelled to face, and which for the future peace of our country and the happiness of coming generations we must have the courage to settle.

Secretary Kersey's Report.

In his annual report, Secretary Kersey of the Southern Hardware Jobbers' Association said, in part:

I desire first to thank most heartily those members of the association who have so generously extended their aid, sympathy and support in making light the duties of my office. We have had our moments of discouragement, but these were only transitory. When these would come, some one of the kind-hearted and faithful would drop us a line, telling us of the good work we were doing, and by appreciative words encourage us to even greater efforts. If a few letters like those above alluded to renew our waning spirits and spur us on to greater efforts, what would be the result if they should come in larger numbers? We have no desire or inclination, however, to criticise our membership for a want of interest, or lack of co-operation in the many steps taken during the year just closing, to foster the projects, and carry forward to a successful conclusion those recommendations which had for their object only the good of our association as a whole. It is true there have been

Some Differences of Opinion

as to a few matters which have been brought to the attention of the manufacturers for correction, but in the majority of instances, unanimity has marked our action, and the best of feeling prevailed. As the years go by, we hope to see our membership come closer, and closer, together. My one ambition, when taking this office, was to discharge its duties in a way that would tend only to the uplift of the association, and foster that feeling of friendship which has always been our prominent characteristic.

Value of Correspondence.

We have not consumed the time to enumerate the number of letters sent out to the association, both circular and otherwise. In our opinion it is not the frequency of letters from the secretary's office that should count with our membership. But when a letter is placed upon the desk of the head of the firm, and on opening it, he finds some meat in the shell, his interest is aroused, and when another comes he is apt to regard it with the same interest. We may have been somewhat prolific in our letters to the membership, urging them to attend this convention, but any seeming insistence on our part can be readily explained. We felt sure if we could get the membership in full attendance at this meeting, they would hear by ear the things we could not place before them so forcibly on paper.

The good feeling which has existed between the manufacturers and members of this association for so long a time has not been disturbed during the present year. Some few complaints have been entered, but they were of a minor character.

THE RECENT PANIC: ITS CAUSES AND REMEDIES.

At the opening session of the jobbers on Tuesday morning, at which the manufacturers were present by invitation, after the addresses of welcome by President Donnan and the Rev. M. W. Manville, the latter welcoming those present to Arkansas in place of Governor Pindall. who was unavoidably absent, a formal discussion of "The Recent Panic—Its Causes and Remedies" took place. The discussion was opened by F. S. Kretsinger, American Fork & Hoe Company, Cleveland, representing the Manufacturers' Association, who spoke in part as follows:

Remarks of F. S. Kretsinger.

The one thing which appealed to me as the reason why on the 23rd of last October there should be a panic was simply that people who had a few dollars lost confidence in the banks that held the money. Ninety-nine per cent, of the banks were sound and conservative; but among them were a few who used the money which belonged to their depositors in promoting one scheme and another. When these facts came to the surface, naturally confidence was disturbed and the panic followed; and yet the mystery of it is that it should follow when we know, as we all do, that the farmer and the planters all over the country are practically rich. The States in the North with which I am familiar, where for years they were in debt, borrowing from the Eastern capitalists and mortgaging their farms, have paid off those debts, and the country banks—by that I mean those banks

cut of the large industrial centers—the country banks today are overflowing with money, and indeed in the large cities the banks are now overflowing with money.

cities the banks are now overflowing with money.

Now, as I said in the start, this question is too much of a conundrum for me to answer satisfactorily to myself. It is sufficient to know that we are in it now. It is a question now of patience. We are entering a period when in most lines there is always a dullness, and I look for no return of even a normal trade until after we are assured of having a fair or a large cotton, wheat and corn crop, and even then we will not recover. It may be years before we return to our old prosperous times, and it is perhaps undesirable that we should return to conditions that existed a year ago. We were all rushed; we were running up hill, we manufacturers of merchandise; we were crowded for material, and you jobbers were crowding the manufacturers for goods. We were running night and day. Now we are glad to run on half time; but let us not get discouraged; let us run on economically and run our affairs at home as well as in our business in an economical way and wait for a recovery of the times which will follow when we have good crops, because the farmer and the planter are the foundations for our prosperity.

Address of J. D. Moore.

Following Mr. Kretsinger's opening remarks, the subject was taken up by J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala., who delivered an able address showing a thorough study of the subject. Mr. Moore said that it was necessary in order to understand the matter aright to follow the movement of great unseen forces extending over long periods of years. He said that

Panics Serve Many Good Purposes.

They are needed as much as prosperity and teach valuable lessons. We must be shocked now and then and made to think and reflect. In the midst of prosperity we are too apt to forget many important things, which the leisure of quiet times gives us the opportunity to consider. The panic of 1893 produced the corporations. The panic of 1907 was produced by a strenuous effort to regulate and purify them. Yea, many thought the idea was to destroy them and resolve them into their original elements and return to the good old days of competition and individual effort,

Growth of Co-sperative Idea.

Mr. Moore referred to the organization of the Southern Hardware Jobbers' Association as the birth of a spirit of cooperation in trade and manufacturing, which has spread to all parts and throughout the entire country. This was thrust forward by the logic of conditions. The panic of 1893 left the resources of the country in a sadly depleted state. All the material elements of prosperity were broken down and the financial and business world was made up largely of weak elements, hardly strong enough to stand the loan. After suffering from the effects of this panic some one conceived the idea of combining a number of these weak elements in order to get an organization strong enough to operate. The idea proved successful and was widely copied, resulting in the birth of the great corporations.

Corporations Became Giants.

Referring to the subsequent period of national development in which the corporations grew to enormous strength, Mr. Moore said:

In the midst of all this prosperity some of these corporations, with their aggregations of strength, conceived a false notion of their power and became too autocratic and too dictatorial, and committed a great many things that needed correcting. Some of them undertook to take charge of legislation and make the laws. In fact, they felt that they were superior to the people, and committed a great many practices, such as the giving of rebates, passes, and extending a great many privileges to a favored class. The people became aroused and concluded that they could not stand this longer. Thus began an agitation against the corporations, which has been going on for a series of years.

Repressive Measures.

Mr. Moore showed clearly how corporation regulation and repressive legislation were carried to extreme, resulting in the frightening of investers and the depreciation in securities. This weakened the banks and trust companies, some of which had to close their doors, and the panic was on. Coming to the features of the situation to-day, Mr. Moore declared that by purchasing stocks at low prices, the poor man has become co-partner with the rich, although the amount of his stock may not be altogether as large as some of the others, but what he has is just as well managed and as well taken care of as the larger stockholders. Now that the laborer has become a partner with Mr. Morgan, he thinks

more kindly of him, and he will make a better juror when it comes to damage suits, he will be more considerate when it comes to a question of strikes; and the question of capital labor has thus been solved in a way that we were not looking for, and instead of Government ownership, as some of our great politicians have been preaching, we will get another and better thing, which is people ownership. will have

The People Owning the Corporations,

and then they will not be such hateful trusts as the politicians would have you believe, and thus the great problem of the brotherhood of man is being worked out. Commerce is coming to recognize the principles of Christianity, which have been taught for thousands of years, that the brother-hood of men is the correct doctrine, and when commerce shall begin to apply the principles taught by Christ, we can suffer the evils of a panic temporarily in order to obtain such results.

Let Us Not Make the Mistake

that the corporations are to be destroyed, since they were produced out of the logic of the conditions of 1893. have come to stay and the principle is the correct one. What we do want is to have purification accomplished through corporate publicity and Government regulation. When the Goverument shall have examined into these corporations and can place its approval upon those that are managed correctly and right, it will be a great assistance to the corporations themselves, and it will force them to be honest, as they should be, so that the investor in their stocks shall invest on the character of the corporation and not be easily swindled, and when that day comes it will be an easy matter to finance the corporation, because all the people are able to do what-ever they desire and set their heads to do.

Some of us perhaps have been abusing different classes for bringing on this panic. The fact of the business is that perhaps all of these have been contributory, and no one of them has been wholly responsible. The real fact is, that

We Have All Had a Part in It

and there has been too much general extravagance; people have been living too high, borrowing too much money, too ambitious to get rich quick, and hence we are all responsible. Then we need not stop to complain of others or abuse any particular class, and we can be more reconciled when we see that the panic is to teach a great lesson, that of the brotherhood of man, the settling of the question of capital and labor by making them partners in the same institution, and when people become partners they become more friendly and considerate of each other.

We have learned that we cannot disturb any of the great interests of our country or any section of our country without we all suffer. Our interests are linked together and our interests are mutual, and if it takes panics to teach this then panics are good things.

POLICY OF PROTECTION AND ITS EFFECT ON HARDWARE INTERESTS.

Another joint session of the manufacturers' and jobbers' associations was held on Wednesday afternoon, over which Mr. Asbury, president of the former body, presided. The session was given up entirely to the discussion of two important topics: 1. "Is the Policy of Protection in Its Broadest Sense, as Viewed by the Business Man, Detrimental or Advantageous to the Allied Hardware Interests of the Country," and 2, "Should Not Associated Manufacturers Who Control Prices Protect the Jobber Against Decline on Stocks on Hand?" The subject of protection was first taken up, Mr. Asbury introducing W. T. Johnson, American Axe & Tool Company, Glassport, Pa., to present the matter from the manufacturers' standpoint. Mr. Johnson spoke as follows:

Address of W. T. Johnson.

At the present time it seems to me well to be guided in a measure by precedent and what has been done along those

We are down here in the grand old South, where since the time when slavery was at question it has not been de-cent to be anything else but a Democrat. I happened to have been born in one of the old Southern States myself and that was the programme that I was brought up on.

Now, I have prepared a little paper here and taken up some records of how protection has been considered in the

past and that is all that I will dare to present to you.

I do not claim that our present Tariff system is correct.
I do not claim that it should not be revised, but I am a protectionist and I believe sincerely that it is to the interest of jobbers and manufacturers alike for the protectionist policy to continue.

That the policy of imposing duties upon competing products from abroad, sufficient to discourage their use, and

to make them unprofitable to the dealer, indirectly promotes the growth of national industries, which means the growth of our country, can hardly be gainsaid.

From the Rise of General Feeling in Europe.

at the close of the middle ages, to the Congress of Vienna, in 1815, all governments pursued the policy of protection to home industry. Among economic theorists, a protest against this was begun by the French Economists, in 1754. It found its finest exposition and defense in their Scotch Disciple, Adam Smith, who contended that the interplay of self interest is quite sufficient to secure the best industrial dewill with his own, he will do what is best for society.

The antipathy of Napoleon I. to this theory and the

questionable methods he employed to counteract it in his Continental System, seemed likely to give it a chance of being applied in the States represented at the Congress of Vienna, but a few years of actual experience satisfied the rulers and cabinets of the Continent that the path to national prosperity did not lie in that direction. They returned to protection, which England and France indeed

for the whole country, through the Zollverein, 1817.

It was in the United Kingdom, in 1846, after eight years of popular agitation, by the Anti Corn-Law League, that a European government, first took steps to abandom protection and the corn-Tally respectively. protection, and that after 510 years of it, had lifted England out of the dire poverty of a merely agricultural country, into the first rank among manufacturing nations. And even she protected her silk and glove industries against French competition, until the Cobden Treaty of 1860 agreed to the abolition of these duties.

In Our Country the Need of National Government,

which could extend protection to the prostrate industries of the States, was one of the most powerful motives to the formation and adoption of the Constitution of 1787, which authorized Congress to impose duties on imports to pay the debts and provide for the common defense and general welof the United States.

The harsh experience of the war for independence had shown the country the need of manufactories for the desnown the country the need of maintractories for the defense of the nation. It was on this ground that our First President repeatedly pressed for adequate legislation, and in this he was supported by his Secretary of the Treasury, Alexander Hamilton, who possessed one of the brightest minds known to history to-day.

The South, during its adhesion to slavery, antagonized pictories and this led to the adoption of the tariff of 1833.

protection, and this led to the adoption of the tariff of 1833 protection, and this led to the adoption of the tariff of 1833—which provided for a gradual reduction of all duties to a 20 per cent. level by 1840. The general suspension of manufacturing through this reduction, and the derangement of the currency, brought about the severe depression of 1837 to 1842, and caused another political revolution, resulting in the election of a protectionist to the Presidency.

Then followed four years of tariff and a general restoration of prosperity. England's example and the prospects of an open market in that country for Western and Southern products, brought about another change. The tariff of 1846

products, brought about another change. The tariff of 1846 embodied no economic principles, but effected a large reduction of duties below the protection level. In 1857, these The tariff of 1846 were further reduced, and another severe depression

of industry helped to the election of Abraham Lincoln.

For 30 years, our country persisted in the policy of protection, with some unhappy experiments in the reduction of duties, notably those on wool and woolens, in 1883. The presence of a surplus in the National Treasury was made the pretense for demanding tariff reform—meaning an advance towards free trade. In 1893, during Mr. Cleveland's second term, material reductions were made, then followed a return to Protection, which the country gives no sign of abandoning at an early date.

The Reasons for Protection

1. The necessity of varied industries, numerous. are numerous. I. The necessity of varied industries, for the national defense has been shown by our history. It was shown in the Boer War, in which a brave people were handicapped by their being merely an agricultural population in conflict with a great manufacturing country.

It may be illustrated in the next great European war that involves Great Britain, through that country's long neglect of her agriculture, exposing her to the gravest peril. A

single defeat of her navy may result in rendering it possible for an enemy to starve her people into submission.

2. The variety of industry, which protection establishes, is not less necessary to defend the country against famine. A country which produces food only is liable to famine and its consequent pestilence, whenever the rains are too scanty or too plentiful, for the harvesting of the crops. Such a country has all its eggs in one basket, and should that fail it has nothing to fall back upon.

3. Protection secures the general welfare of the producers of the country by bringing each class into the neighborhood with the others, which supply its wants and demand its goods. It thus saves the cost of carrying products

over land and sea to find a market and bring back at a like cost of carriage whatever is taken in exchange.

4. The naturalization of varied industries by protection gives the people of the country greater liberty to choose the kind of work they prefer and a finer opportunity to develop their natural capacities, in improving old methods or inventing new ones. This has been specially true of us. We were taunted for our backwardness in invention before this became a manufacturing country. At one time an English manufacturer said: "We could not make so much as a mouse trap for ourselves." American inventions have lightened the burden of toil for half mankind. They have made many staple articles, such as Steel, Cutlery, Cotton, and Silks—cheaper to the whole world. The American character has been distinctly improved by emergence out of the stage at which farming and shipping furnished almost the only employments.

5. By preventing adverse balances of trade, protection guards the national supply of solid money from being desired out of the country.

drained out of the country.

Money is not a commoditiy like any other—as to whose incoming and outgoing, we can afford to be indifferent. It is the means of organizing labor for the conquest of nature, and the production of wealth, and it is not indefinitely replacable, as are many other commodities. To exchange it for Hardware, textiles, is to exchange power itself for products of power.

Address of W. W. Webber.

W. W. Webber, Webber-Ayers Hardware Company, Fort Smith, Ark., as the representative of the jobbers, followed Mr. Johnson. His remarks were, in part, as follows:

As a naked question a protective tariff is not detrimental, but advantageous, but it depends on how far the Government goes, as to which it is. Under the present schedules I do not hesitate to say that it is detrimental. I will not tire you with a rehearsal of the various duties on raw and finished products, but will content myself with pointing out the effects resultant upon the present tariff rates.

Demonstration by Comparison.

I shall not adhere strictly to a discussion of the effects on the Hardware business, but must be permitted to take a wider range, and prove, if I can, the iniquity of the present Tariff by comparison. It is a generally accepted fact that the tariff is responsible for the existence of what are termed the trusts. The proper definition of a trust is an aggregation of capital, or an agreement between two or more makers of identical articles that the price shall not be less than a certain sum. There was a time, in the early history of manufacturing in this country, when makers of similar or identical articles sought patronage on the grade of the article offered, but that day has passed, because all, or almost all interests of a similar nature are pooled, and a buyer is left to pay his money and take his choice and very frequently no choice is left him. This condition could not prevail but for the present tariff schedule.

Present Effect of the Tariff.

If the tariff offered incidental protection only it would be practically impossible to maintain the high scale of prices now prevailing on many manufactured articles. As it is now, all that is necessary is to name a selling price just under what foreign goods of like character will cost with the duties added, and no particular concern need be felt as to where the market is to be found. It is right here under their nose, and cannot be elsewhere because of the tariff. It has been said that if the tariff is revised the revision should be made by its friends, but I am wholly unable to grasp the wherefore. It were like having

A Jury of Relatives

sit in the trial of a criminal. It is a patent and conceded fact that tariff revision looking to a reduction has long been demanded, especially is this true in the West, Northwest and the South. One reason it has not come is because of the antipathy of the now dominant political party to any political move that will endanger its supremacy. The tariff should not be, but is, regarded as a political question, when it is purely one of business. If any factory, just beginning the manufacture of some new and untried item of trade, needs protection it is right that they have it, but when one has grown great, powerful and rich, and has taken advantage of the conditions created by the tariff to the extent that our people at home pay more for the same goods than said goods sell for abroad, then it is

Time to Call a Halt

and have a reckoning. The first promoters of the tariff had no conception, I opine, that its duties and operation would ever result in one section of the country, and one class of people using it to the detriment of the remainder, but that this is done now, and has been done for long years, is not subject to successful denial. These agreements that we

know exist have no place in an open market where the question is the survival of the fittest, and if we continue to hedge them about with a tariff, we will be

Doing an Injustice

to the public at large, and render the coming generation of manufacturers less able "to paddle their own canoe." They will come to regard government favors as their due, and will not be qualified for a change when one does come, and come it will. Protection is not now administered in its broadest sense, but in its narrowest, and so long as it is so administered our government cannot escape the indictment that it is

Playing Favorites.

All good citizens, irrespective of party affiliations, will hail with delight the day when we will be represented by men who are sovereigns of their own conscience, and masters of their own judgment, who do not wait to hear the crack of the party whip, nor wait until the leader takes snuff ere they sneeze. When this time does come, the millennium may arrive with it, but we wish for it just the same. In view of all that can be truthfully said anent the unfair workings and effects of the tariff, when we consider that it is responsible for the existence of the great trade octopi, when we consider that it is national law that makes it

Possible for a Few Men to Dictate

the price we must pay for the vital necessaries of life, we cannot say that it is administered in its broadest sense, and are forced to the conclusion that it is detrimental to the allied Hardware interests, as well as all allied interests, unless they are in position to avail themselves of the advantages the present schedule gives. I may be charged with seizing this occasion to make a political address, but such is not my desire. I have only attempted to state some wholesome truths, and if doing so brings down condemnation on my head, it is the subject that is responsible and not myself. I did not care to present a labyrinth of figures which are tiresome, but deemed it sufficient to treat the subject in a general way. I have done so without animus, and if some of my terms and expressions appear harsh, I can account for it only on the ground that no other words would properly set forth my opinion. The tariff creates an unfair condition between citizens of the same country, and that is enough to condemn it.

Address of F. S. Kretsinger.

The subject was then thrown open for general discussion. F. S. Kretsinger, American Fork & Hoe Company, Cleveland, Ohio, spoke as follows:

I most heartily agree with many of the points taken by Mr. Webber. Seven or eight years ago that great organization, the National Association of Manufacturers, at its convention in Detroit, spoke out forcibly on the subject of the revision of the tariff, favored by every organization present and every industry as I recall it, except the textiles. Singularly they had been protected to the extent of 30 per cent., and were not willing to sacrifice any of that, notwithstanding France at that time offered us most generous terms which would have profited this country from that day to this, and France will never offer them again.

Some Duties Are Detrimental.

Among the ten thousand and one articles now classed as Hardware (many of which are so rated, not because of their actually being Hardware, or because of their being composed of iron or steel, either wholly or in part, but simply and only because they are bought and sold by the wholesalers of Hardware), there are, perhaps, some, and possibly, many, articles which are protected by import duties to the detriment of the interests of the Hardware trade in some sections of the country.

I take it that we are not discussing this subject with a view to urge legislation by those having the power to make

I take it that we are not discussing this subject with a view to urge legislation by those having the power to make and unmake duties, but rather that we are considering the matter in a broad and a general way as a pastime for this particular session.

With the average citizen, the parting with money, whether for taxes as generally understood, or for duties on imports of any kind, is not celebrated as an occasion for joy and congratulation. We seldom sing while on our way to the assessor's or tax collector's office, nor would we seek out and inquire for the Custom House officer were we able to leave and carry our luggage from the steamer's dock unseen and unembarrassed. And yet we all admit that funds are required to carry on Governments, whether National, State or other, under which we seek protection.

Not Imposed Equitably.

Neither ordinary taxes nor duties on imports are imposed equitably and readjustments and modifications of the tariff should occasionally be made in keeping with times and conditions.

So far as I have any knowledge, no duties on Shelf Hardware importations in general can be characterized as extreme, when one gives fair consideration to cost of material, fuel, labor, &c., in this country and the cost of same in foreign countries. As a general proposition,

Protection Benefits the People as a Whole

and is an aid to prosperity. Then it naturally follows and is a self-evident fact that the allied Hardware interests share equally in its advantages with the rest of the people.

If protection tends to increase the number of factory, shop and mill operatives, to enhance the price of their labor, it in turn improves the manner of living, and elevates the masses in a moral and educational way; there is less pauperism; more attention is given to schooling; skill and inventive genius are encouraged; men are better citizens in times of more and are better fitted for partially defeated in the school of the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are better fitted for partially defeated in the second are second as a second as a second are second as a times of peace, and are better fitted for national defense when called upon for such duties, and we all share alike in the advantages of these conditions, whether Hardware dealers or those engaged in other pursuits.

Direct Advantages.

Not only do Hardware interests share in a general way in the advantages of protection, along with all other classes and other industries, but directly and specifically in other ways; for instance, a few, and perhaps the majority of Hardware wholesalers are located in manufacturing districts and no small part of their trade, directly or through their distributers and retailers, comes from these same factories, their principals and their operatives, which trade contributes materially to the prosperity of such dealers.

You, certainly as buyers, come into more frequent and closer contact with domestic manufacturers than you possibly could with manufacturers from across the water; you in very many instances have a long personal and friendly ac quaintance with them; your influence as an individual and through your association with them is of no inconsiderable importance, and as against this, it is practically nil with the foreign producer of Hardware. You, in a measure, influence and at times regulate his prices, for you daily meet his com-

The domestic manufacturer, more readily and promptly than the foreigner, conforms in patterns, weights, sizes, &c., of his wares, and in many other ways, to your views and to the especial requirements of the many sections of the country from which you come. He is a near-by source of supply for you, enabling frequent purchases and comparatively short periods for their receipt.

If these few things count in your favor, then just so far and probably much farther is protection advantageous to the allied Hardware interests of this country.

Address of C. W. Asbury.

Mr. Donnan taking the chair at his request, Mr. Asbury spoke as follows on the question under discussion:

There were one or two points in Mr. Webber's paper which it seems to me ought to be made clear, if it be possible from the manufacturer's standpoint. The first was, as I understand it, a direct charge that a protective policy was food for trusts. That does not seem to me to be was food for trusts. That does not seem to me to be logical. It seems to me that it is answered rather directly by a consideration of the fact that trusts are actually more numerous in Great Britain and in Germany, our principal industrial competitors, than here, and Great Britain is a free-trade country, practically so.

A Trust Cannot Be Fostered by Protection

unless more than a reasonable protection is afforded. If it has a reasonable protection, and goes one step beyond it, then foreign competition comes in. If it has an excessive protection that is not what we are here to protect; it is the policy of protection as such and not the abuse of it, as I understand.

The next point was as to the selling prices of goods at home and abroad. If I understood Mr. Webber correctly, home and abroad. If I understood Mr. Webber correctly, he stated that that was not properly a subject to deny. I am not going to undertake to deny it, because I think that manufacturers generally will admit that such is the case in certain exceptional instances only. Now, as to those exceptional instances and the warrant for doing so: Suppose, for instance, you are making a line of goods where the natural and consumptive demand of the United States is not sufficient in volume to enable you to manufacture these sufficient in volume to enable you to manufacture these goods with a maximum of economy. I am going to ask whether it is detrimental or injurious to the people of the United States if the manufacturer of such a class of goods will make a lower price for export than he does for home consumption and thereby produce a larger volume from his plant at a greater economy in production, which means actually in net results that the American purchaser buys those goods for a lesser price than if not protected.

Protection of Labor.

There is another point which should be touched upon.

The allied Hardware interests are all interested in the permanency and the lucrativeness of laborers' wages. The policy of protection is primarily designed for the protection of labor. I would like to ask in all seriousness how any of you who might be engaged in a manufacturing business can

compete with Germany, as an example, where the labor of Germany gets a net return of about one-third the return that the American laborer gets for an equal quality of labor, and that the laborer in Germany works twelve hours against an average of nine hours in the United States. If that labor is not protected and those wages are reduced consistently with the difference to which I have just referred, then the labor in this country will be practically pauperized and their purchasing power will be reduced so fearfully that

every gentleman in this room will be affected by it.

Now, the manufacturers generally do not ask for excessive protection. They do ask for protection in the interest of their labor; in the interest of themselves naturally as against the foreign competition.

Tariff Commission.

In fact, the National Association of Manufacturers, composed of over three thousand manufacturers in various lines, have recently reiterated the position which they took a year ago in advocating the appointment or the creation by Congress of a commission for the purpose of arranging tariff schedules, the idea being that such a commission might pos-sibly be able to arrange those schedules upon a fairer basis to all interests than the committees of Congress could direct. to all interests than the committees of Congress could direct. I confess that I myself think there is perhaps a little bit of an overdose of theory in the proposition, but it shows nevertheless that the manufacturers as a class ask for only that which is fair. They are quite willing and they are desirous of having a commission created, which commission could send an agent to their plants and determine the cost of production at their plants; send agents abroad and compare the costs of production of a similar article in foreign lands and arrange the tariff schedules so as to provide for the difference between the cost of production at home and the difference between the cost of production at home and abroad.

The strong protectionist goes a little farther than that. He says in addition to the difference between the cost of production there should be added a sufficient margin of safety to provide against varying conditions. What he means by that is that the time might come when the business activity of this country would be such as to necessitate the payment of exceptionally high wages. During that same period it might well be that a period of depression would be in progress in some foreign industrial country. The costs in that foreign industrial country then would decline and costs in this country would advance, which would bring the unfair competition to which I have referred.

PROTECTING JOBBERS AGAINST PRICE DECLINES IN STOCKS ON HAND.

Inaugurating the discussion on the question "Should Not Associated Manufacturers who Control Prices Protect the Jobbers Against Decline on Stocks on Hand?" W. F. Stephenson, Barnes & Miller Hardware Company, Memphis, Tenn., read a paper as follows in part:

Address of W. F. Stephenson.

To say the manufacturers should be responsible for depreciation on stock on hand, caused by declines in price would, at first, appear unfair to them but after viewing this matter from the different standpoints, I believe if conservative methods are followed, both jobbers and manufacturers can be benefitted by working in harmony.

The Jobbers in Handling the Wares of Associated Manufacturers

devote their time and capital in marketing the goods at a price fixed by the manufacturers, receiving as their profit a

price fixed by the manufacturers, receiving as their profit a fixed percentage on the sale and in most cases the profit reserved for the jobber is slightly above the average expense of operating a general Hardware jobbing business.

In such case, the jobber or the buyer for the jobbing house has very little, if anything, to say regarding the amount of profit that is to be received as a compensation for marketing the goods of the associated manufacturer; and as the jobber is the selling agent marketing the goods, we might say, on a commission basis, the manufacturer, in my opinion, should take care of the jobbers on stock on hand in case of declines.

Some manufacturers would doubtless take the position

Some manufacturers would doubtless take the position that the jobber gets the benefit of increased value of stocks on hand in case of advanced prices, which is true, but this is not the point that needs special attention and consideration, as it is very easy for both the jobber and manufacturer to make a profit on advancing market. It is the decline that takes away the profit and needs to be given special attention.

Policy of Some Leading Manufacturers.

There is one point that I wish to direct your attention to in this connection, and that is, it is now, and has been for some time, the policy of some of the leading manufacturers to take care of the jobbers on stocks on hand, which is no doubt beneficial to the manufacturers in having the jobbers order the goods when needed, thereby keeping the factories in full operation and keeping their stocks in position to care

for the orders received from the retail dealers.

This is one benefit we can all obtain, and I am firmly of the opinion that if the leading manufacturers would show a disposition to take care of the jobbers on stocks on hand the markets would oftentimes remain firm and unchanged and the wheel of the mills continue turning, when otherwise they would be running on short time and the jobbers would suffer for want of goods to supply the general demand.

Market Changes Are More Apt to Occur

in times of depression, when the manufacturers are in actual need of orders, than when they are running on full time and do not need the business to keep their plants in operation. The associated manufacturers have the advantage of the jobbers to the extent that they know by coming together and going over the situation just what a change in price means to them, as they can determine the amount of raw material on hand and they know the costs of operating their plants. I beg to and they know the costs of operating their plants. I beg to suggest it would be fair to the Hardware jobber to ascertain from the jobber the amount of stock on hand and consult his wishes before reducing prices on goods sold at restricted prices, and by pursuing the policy above outlined, to work in conjunction with the jobbers, orders would be placed more freely, and, besides, jobbers would be more loyal to manufacturers than if they felt they would not be taken care of in case of a break in the market.

I do not believe, however, associated manufacturers should be expected to allow rebates on goods that have been carried in stock for unlimited time, but should be limited to purchaser for a reasonable period.

purchaser for a reasonable period,

The Value of Merchandise Should Be Fixed

by supply and demand. The manufacturers are entitled to a legitimate profit on the amount of capital invested and the time and attention in operating the plants and placing the goods in the hands of the jobbers. The jobbers are also entitled to a reasonable compensation for carrying stocks and distributing the goods to the retail dealers, and with manufacturers and jobbers working on a conservative basis supplying the demands at a fair market value and keeping the prices on a conservative basis there should be very little need to take into consideration the question of taking care of stock on hand in cases of declines, as there would be very few declines.

During the Past Few Months.

when a great many of the factories were in actual need of business to keep their plants in operation, some of the manousness to keep their plants in operation, some of the manufacturers have taken a very firm stand and have refused to reduce the prices, claiming, and justly so, a decline in price would mean heavy loss to the manufacturers, jobbers and retailers alike, without increasing sales, but would have a tendency to lessen same, and I am frank to say, I fully agree with the manufacturers taking this stand. What we now need is to have goods in stock, thereby being in position of a supply the retail dealers promptly and at a fair, price to supply the retail dealers promptly and at a fair price, working in harmony with the manufacturers by keeping the factories running and stocks turning without fear of heavy loss to any one.

It is in my judgment much better for the manufacturer to take care of a reasonable amount of stock in the hands of the jobbers than to have the goods in their own warerooms and be compelled to sell at less than actual value to move them.

is frequently the case when manufacturers disband associations to make a rush for business at reduced prices, which is no doubt unprofitable to the manufacturers and also takes away the profit of the jobber and in regard to this one particular point, I will say, as I have already said, we should be conservative.

If the goods are not being sold at more than actual value there should be no reduction in prices as the manual colors.

value, there should be no reduction in prices as the manufacturers, as well as the jobbers, are entitled to a reasonable profit and they should not forfeit profit because of dissolution of associations.

I am opposed to advancing prices in times of prosperity unless the cost of production makes it necessary and am likewise opposed to reducing prices in times of depression unless the cost of production and distributing can be reduced accordingly and in case of declines on goods controlled by associated manufacturers it is but right that stocks in the hands of dealers should be taken into consideration before making changes. Seasonable goods might here be given a thought. If we work on a conservative basis there should be very little change in prices on seasonable goods which would be beneficial to jobbers and manufacturers on stocks carried over from one season to another.

Address of Walter W. Birge.

The manufacturers' position on the question was reflected by Walter W. Birge, Fayette R. Plumb, Inc., Philadelphia, who spoke in part as follows:

In the first place I want to say that this whole question resolves itself into the fact as to whether or not the manufacturers are honest with the jobbers. If they are not I think the jobbers will agree with me that they will not

succeed. You know as well as I do that the success of almost every manufacturer here is due to the fact that he has taken care of the jobbers. Now, when I say taken care of the jobbers that is a particular term. I have had a good many jobbers say to me, "Will you take care of me," and I always want the terms specified if it is going to be anything definite; but I feel that the jobbers will agree with me that any manufacturer in the hardware trade who has not taken care of the jobber has failed sooner or later. The jobbers pretty soon find out who their friends are, and they "eye up," if I may use the expression, to a greater or less degree with their friends—taking that word "friends" in the broad sense in which it is meant.

Now associate manufacturers reduce prices owing to cer-a conditions. No manufacturer is going to reduce prices tain conditions. unless it is brought about by competition or by a great reduction in the cost of his material. And what is the result when prices are reduced? I dare say I don't believe the average jobber can contradict it that in 99 cases out of 100 where reductions are made 99 jobbers out of 100 are

Tipped Off Before the Reductions Are Made.

not one day, but, if the manufacturer can do it, tipped off three or four months in advance. I believe that every manufacturer who is a successful and honest manufacturer will tell every jobber with whom he does business as far in advance as possible when there is likely to be a weakening in price.

Profiting on Advances.

What is more, on the other hand, I believe that the average jobber profits by every advance which is made. It is no uncommon thing for a jobber to come to a manufacturer and say, "I take it for granted that in case any change is made in your prices in the way of advances you will keep me posted." It is no uncommon thing for a manufacturer to get an order two or three days after an advance which through an error of some stenographer has been due two weeks before, and in very many cases it is very difficult for the manufacturer to prove to the jobber that the order was not absolutely in the mail, or at least turned over to some irresponsible office boy to be mailed before the advance took place; and I think in most cases the manufacturers do take care of the jobbers on such advances to a greater or less degree, and I vouchsafe the opinion that in the last 15 years the jobbers have made more money due to advances in stock than they have lost through declines.

Jobbers have told me in the last few years of the thousands of dollars which they have made due to advances in price of stocks on hand. Why is it that jobbers do not make profits when advances take place? They say it is because of the cutting of profit, or due to the fault of the manufacturer. the cutting of profit, or due to the fault of the manufacturer. It is due to the fact that there are certain manufacturers who will not profit by the goods they have on hand, and if they are bought at a reduced price will not get the advance when it is made. That cannot be controlled by the manufacturers, and in the case of declines the same thing is true.

A great many jobbers take the position that the manufacturer can control his nurchasing department. I know of

A great many jobbers take the position that the manufacturer can control his purchasing department. I know of manufacturers who have lost thousands of dollars—large manufacturers—due to the reduction of the stock on hand of steel. The same thing exists with his labor; he cannot control that. If there is anything arbitrary it is certainly manufacturers' labor.

Re-sale Prices.

The last speaker said that they fixed the percentage of profits—the percentage of profits were made by the manufacturers to jobbers. Perhaps I misunderstood him, but I believe there are very few cases where the re-sale price is made by the manufacturer. Where they are made it is almost universally made after consultation with jobbers either individually or through their own association, and I that a great many manufacturers—in fact, most of them—would be very glad to make a re-sale price on any reasonable basis if the jobber could agree to those prices. There are jobbers in this house to-day that will not make re-sale

The preceding speaker spoke of jobbers being the selling agents of the manufacturers. I wish that were so; we would have less special brand business; the manufacturers could perhaps regulate their selling agents to a better advantage than they can at present. I think many things could be worked out if the jobbers would accept as a fact that they are the selling agents of the manufacturers.

I think the question we have before us, as I said at the

I think the question we have before us, as I said at the start, resolves itself into a question of common-sense and reliance of the jobber upon the manufacturer. I know that we expect to take care of our customers. I don't mean to say by that that we expect to rebate their stock on hand, for we do not, but we expect to treat them fairly, and if we shipped goods to-day and reduced the price to-morrow I think we would be inclined to do something for the jobber.

I take the position that the manufacturer should treat the jobber as an agent and keep him in condition to sell his goods to the best advantage and to sell them in competition with any other jobber.

tion with any other jobber.

Jobbers' Local Associations.

A paper on "Importance and Benefits of Local Associations" was read by Harvey L. Anderson, Anderson Hardware Company, Atlanta, Ga., which strongly urged the importance of such organizations, holding them to be quite as necessary as the larger associations. give the following extracts from it:

The fact that we are here as the Southern Hardware Jobbers' Association is or should be a prime reason for having Local Associations, for what does it profit us to meet one week out of each year and fight each other during the other fifty-one?

Equal Pleasure and Profit.

I know every member loves our Association, not only for the good it has done us, but for the strong ties we have formed, and we look forward each year with delight as the time rolls around to meet at our next gathering, and, if you will form a Local Association, you will look forward with just as much pleasure to your local meetings, and my word for it—it will be just as much—if not more money in your pockets to have and cultivate these meetings. I would not undervalue our Association, but Local Associations are quite as important as the large Association. It is just as important to know and

The Trouble with Some of Us

is, we are perfectly willing that the other fellow hold up his prices, and we be allowed to sell at any old price we see fit. We should be allowed more latitude because of the fact bor. In forming a local Association, we are inclined to expect too much all at once. We have been fighting each other too long to reach perfect harmony on the jump. When our neighbor or competitor falls down, be just as lenient with him as you would expect him to be with you were you placed in his position. we cover more territory and sell more goods than our neigh-

Take Poultry Netting for an example. quently your neighbor across the street or on the other side of town is long on 4 ft. Netting, and you happen to have every other size in stock, but happen to be out of the 4 ft. He would be just as anxious to have you exchange with him and swap you the size you are out of and get in exchange some of the other sizes. In doing this you can the better some of the other sizes. In doing this you can the better serve your customer, rather than keep him waiting two and sometimes three weeks for what you could get for him at no expense to yourself, simply the time it takes to call on your neighbor. He has just as big a heart as you have, and the Lord made him just as well as He made you.

You Will Serve Your Customers Better

by having a Local Association. One of our customers may be in a shaky way and wants to owe us too much money, and your neighbor may be as good if not a better credit man than you are, and in this manner you will save money you would possibly lose, or if your customer is worth sav-ing, your neighbor will join hands with you and possibly save a good man, when if you were fighting each other, it would be impossible to get together on any kind of a friend-

If you have a competitor handling a certain line of goods, let him keep on handling them. You can put in another line of goods and in this manner you will be fighting each other and both of you will make money by working along these lines. The trouble with the most of us is, we are willing to give credence to a customer living in another town who has an object in view, rather than believe our neighbor. Let me appeal to you that we see the good in each other, rather than believe the petty reports that come to us, and by having a local association you will learn to think better of your friend and competitor.

Upon motion it was declared to be the sense of the meeting that such associations should be established in all jobbing cities in the territory of the Southern Hardware Jobbers' Association,

Jobbers' Executive Committee's Report.

The report of the executive committee of the Southern Hardware Jobbers' Association was rendered by O. B. Barker, of the Barker-Jennings Hardware Company, Lynchburg, Va., chairman. We give the following extracts from it:

We want to impress upon our membership the fact that the many benefits which they have received as members of this association have not been by accident, nor the generosity of the manufacturers, but as the result of painstaking effort, and persistent determination of your association. The same effort which accomplished these results in the past will achieve greater ends, if intelligently and persistently continued in the future. Remember always that the individual member is the unit which counts in summing up the results, and, therefore, each member should be willing to sacrifice his individual preferences for the benefit of the membership as a whole.

Your committee feels it would be derelict in duty should

they fail to make mention of and to give some expression to the very arduous, painstaking and efficient duties performed by the president and secretary of this association, John Donnan and C. E. Kersey, during this year just closing. Matters of the gravest character, and difficulties of the most trying nature, have arisen, and in each instance it gives us the greatest pleasure to testify to the more than competent and efficient manner in which they have discharged these difficult and delicate duties, and we, therefore, recommend that a rising vote be given them as a token of the high esteem and great regard in which they are held by their associates.

Supporting the Southern Association.

Hugh Fox, Fox Bros. Hardware Company, Pine Bluff, Ark., presented a paper under the title "Why Should Not the Southern Hardware Jobbers' Association Have the Unqualified Support of Every Eligible Hardware Jobber in the South." Mr. Fox said that

All successful movements, whether religious, political or commercial, had their starting point in organized effort. The Southern Hardware Jobbers' Association is composed of men who stand together, move together and act together. Joining this association is not like trying some new experiment. The Southern Hardware Jobbers' Association is not in its infancy, but is to-day celebrating its eighteenth annual convention. Let us consider the benefits of membership. Memvention. Let us consider the benefits of membership. Membership in this association enables us to keep in close touch with the Hardware jobbers of the South. The individual jobber can do little to protect his business interest, but when he allies himself with the common interest of the association the combined strength becomes a mighty power. This union and hearty co-operation on the part of our association has already demonstrated to the manufacturers the strength of our organization and the loyalty of its membership in up-holding the hands of the executives.

The speaker then cited a few instances where the influence of the association had been used with great advantage to the members in their relations with certain manufacturers. He also referred to the social advantages derived from membership in the association.

Profits on Staple and Seasonable Goods.

"How Shall We Increase the Profits on Our Staple and Seasonable Goods?" was the subject of a paper read by H. Young of the Southern Hardware & Supply Company, Mobile, Ala.

Mr. Young said that it had been fully demonstrated that thorough organization and co-operation is essential to the successful administration of any business. While he did not believe it practicable or desirable to undertake to fix arbitrary selling prices for all territory he thought in every city in which there were two or more jobbers they should meet for their mutual benefit and protection, not for the purpose of making unreasonable or unjust demands upon customers nor for the purpose of forming any combination or violating any laws, but simply to correct any abuses that may exist and where feasible regulate prices upon a fair and equitable basis. He believed that salesmen were to some extent responsible for the present demoralized prices from lack of proper discipline by the sales manager. They should not be allowed to use their own discretion in making prices.

Officers of the Jobbers' Association.

The following officers of the Southern Hardware Jobbers' Association were chosen for the ensuing year:

President, W. L. Sanford, Sherman, Tex. First Vice-President, H. R. Miller, Memphis, Tenn. Second Vice-President, S. C. Dinkens, Atlanta, Ga.

President-elect Sanford announced the selection of the following Executive Committee: O. B. Barker, Lynchburg, Va.; Bruce Keener, Knoxville, Tenn.; J. D. Moore, Birmingham, Ala.; F. A. Heitman, Houston, Tex.

Next Year at Pittsburgh.

Invitations from Pittsburgh, Chattanooga and Washington, D. C., were considered by the jobbers and manufacturers, but in the final division the choice fell upon the first-named city, so that the next annual meeting of the Jobbers and the 1909 semi-annual meeting of the Manufacturers will be held in Pittsburgh on identical

THE AVERY STAMPING COMPANY, Cleveland, Ohio, is sending out an advertising novelty in the form of a celluloid "Teddy Bear" pocket pin cushion, the object of which is to further the sale of the company's Never-Break Steel Spiders and other Cooking Utensils.

THE BEST METHOD OF DEPARTMENTIZING BUSINESS AND THE BENEFITS TO BE DERIVED THEREFROM.

The following practical and suggestive paper under the above title was read before the jobbers' association by S. Norvell, Norvell-Shapleigh Hardware Company, St. Louis:

The invitation from the Southern Hardware Jobbers' Association to address them on "The Best Method of Departmentizing Business and the Benefits to Be Derived Therefrom," is taken by me as a personal compliment, and I do not hesitate to say this compliment is very much appre-

not hesitate to say this compliment is very much appreciated. The fact that you ask another jobber, member of another Hardware Association, to talk to you on this subject indicates you are broad gauged and liberal minded, and that you are not actuated in your deliberation by any petty jeal-ousies.

Now I do not presume to give you any advice on this subject. Each jobber has his own problems. He must work out these problems in his own way. Each of us in our efforts must be guided by our own environment. A good system for one jobber may not fit the business of another. A system that

of another. A system that is a good thing for a large jobber may not be at all desirable for a small jobber. In this paper I naturally speak from the point of view of the jobber doing business over a large area of country. I cannot speak from the viewpoint of the local jobber, because I have never had any experience in local jobbing.

Experience with a Professional Systematizer.

Allow me to say in the beginning that in our own business we have taken a dose of the professional systematizer, and we have gradually and slowly recovered. It may not have been his fault—it may have been ours. I believe if a jobber has not enough brains in his own establishment to evolve a suitable system for his business, such a jobber has

not brains enough to successfully carry out a system outlined by some one else.

We paid the expert systematizer \$40 per day, and the net result of his work was that for the rest of our lives we would be compelled to use the books and forms that are printed exclusively by his company. He had certain ideas which he attempted to force upon our business whether they fitted or not. He did not know enough about the peculiarities of our business to see where exceptions must be made. He kept two of our best stenographers at work several days making his report, and one of these stenographers told me most of the report was dictated by him from printed forms.

Not a Single "Professional" Idea Adopted.

About a year later I received a letter from this firm of systematizers asking me how we were getting along. I replied briefly we were "convalescent, but not quite recovered." We learned afterward they went to other jobbers and told them how they had systematized our business, and what a large part of our business we owed to them. Now it is the plain truth that while we have filched a good many ideas from other jobbers in the course of our business career, and still have our eyes open for new ideas, we did not adopt a single idea put forth by this expert business systematizer, and we have a notion he picked up quite a few pointers on his own hook in going through our establishment, which we have since learned have been adopted by some of our competitors.

Ever on the Lookout for Improvements.

I am giving you some of the conclusions I have reached in my experience as a Hardware jobber. Some of these conclusions may not apply to the present, but all men in business who have ideals look to the future. They must dream of improvements. They must think of that perfect business, which perfection they know they will never attain.

There cannot be a perfect business until there is a perfect.

There cannot be a perfect business until there is a perfect executive, and until there are perfect employees. This condition will not come until the millennium, and then probably we will not be worrying about the departmentization of any business.

My personal friend, Mike Kinney, says a wise man makes questions, and only a fool makes statements. Therefore, in making this address I am placing myself in the position of the man who is foolish. I am about to make a number of statements. I am going to make some of these statements without qualifications, which I would qualify if I had more time.

As this paper is on the subject of departments, it is

CONTENTS.

A Medenn Wood Workley Workleys Plant - The control of the control	AUE.
A Modern Wood Working Machinery Factory. Illustrated	
	1925
	1925
The American Foundrymen's Association at Toronto	
Automobile Cylinder Manufacture	
	1934
***************************************	1936
	1937
Control of the contro	1938
	1940
	1941
	1941
	1942
	1944
	1944
	1944
	1945
	1945
Editorial:	
Conventions and Foundry Progress	
The Protection of Foreign Patents	
The state of the s	1947
Niagara Falls Power Conditions	
Coal Briquetting	
Seattle Business Notes	
Customs Decisions	
The Dominion Iron & Steel Company	
The Hanson & Van Winkle Cold Galvanizing Process	
Slag Cars for Open Hearth Furnaces. Illustrated	
A New Cincinnati Chuck	
Personal	
Obituary	1952
News of the Works:	
Iron and Steel	
General Machinery	
Power Plant Equipment	1953
Foundries	
Fires	
Miscellaneous	1953

WALL TO THE REAL PROPERTY OF THE PARTY OF TH	
Trade Publications	1071
The Iron and Metal Trades:	1954
	1025
	1955 1955
	1957
	1958
Birmingham	1960 1961
St. Louis	1961
Cleveland	1962
New York.	1963
Metal Market.	1963
Iron and Industrial Stocks.	1964
	1965
Canadian Rail Demand	1965
New York Machinery Market	1000
	1966
Chicago Machinery Market	1966
	1967
	1968
New England Machinery Market	
Carrottered amountained management of the contract of the cont	1969
	1970
Hardware:	1971
	1974
Notes on Prices	
	1976
Movable Stand for Displaying Vises. Illustrated	1976
Death of Jonathan S. Haselton	
	1977
Orr & Lockett's "Red Book"	
	1978
The Hot Springs Conventions	
The Best Method of Departmentizing Business and the	1010
Benefits to Be Derived Therefrom. Portrait	1986
Arkansas Retail Hardware Association. Portraits	1990
Success Chemical Fire Extinguisher	
The General Electric Company	
Hoag Combination Padlock. Illustrated	1005
Milwaukee Steel Fence Post. Illustrated	1005
The Sanitary Horse Brush. Illustrated	
Coal Chutes. Illustrated	
The Wonder Washer. Illustrated	
Crown and Crescent Surface Half Mortise Butt. Illus.	
The Faultless Carpet Stretcher and Tacker. Illus	1007
Hubbard's Folding Delivery Box. Illustrated	1009
Current Hardware Prices	1999

only proper the paper should be in departments. Therefore, I will call this part my introduction.

Ideal Hardware Jobbing Business.

I trust you will follow me in the mental attitude of a man who has about \$5,000,000 in cash, who intends to esman who has about \$5,000,000 in cash, who intends to establish an ideal Hardware jobbing business, with a view of selling goods in all parts of the country. I mean enough cash to erect the most modern and up to date building; to carry the most modern and up to date goods; to put in the most modern and up to date system of handling that business, and to employ the very best talent in the Hardware trade to be obtained in this country.

Such a venture I have not the slightest doubt in the end would be successful; I believe it would pay very satisfactory profits, but I seriously question if you could find many men, even if they had the ability, who would be willing to sacrifice their lives to such an undertaking.

Besides, if a man had enough money to carry it through I am inclined to believe he would be like the fellow down here in the State of Arkansas who asked the price of a saw-mill. When told it was \$5000, his answer was, "Why, if a man had that much money what would he want with a sawmill?"

The Organization.

The organization of a jobbing Hardware business naturally falls into five divisions—executive, financial, buying, selling, warehousing and stockkeeping. Each of these divisions should be in charge of at least one director of the com-

The executive has general oversight of all departments. The financial director should be in charge of banking, datings, credits, accounts, books, records, &c.

The buying director is in charge of the buying, addition of new lines of goods, maximum and minimum stock, &c.

The director in charge of sales is in charge of the sales

managers, salesmen's routes, selling prices, and the general selling policy of the house.

The director in charge of stock and warehousing should

have charge of the filling of orders, the use of room in the warehouse, employment of stock people, and the receiving and shipping of goods. The shipping department should come under his jurisdiction.

The Building.

Your building is of the greatest importance—it is the very basis of your organization. If you desire to do business economically your building must be fixed for it. It must be built to exactly fit your business. Every detail must be figured out in advance.

Your building should all be under one roof. If land is

Your building should all be under one roof. If land is not too high priced the best building would be one of large area, but not very high—not over four or five stories. This building should be on the incline of a hill. Then you would have two levels. In the basement or Levels. lower level you could carry your heavy goods and unload or load them immediately on the cars. The tracks should run along your building on the lower level; but outside not inside

outside, not inside.
On the upper level or first floor you should establish

On the upper level or first noor you should your general offices, city department, &c.

Your sample department should be on the top floor. This has noot inexpensive in your house. With passentine passentine and the passentine passe space is the most inexpensive in your house. With passen ger elevators the sample room could be reached without de

ger elevators the sample room could be reached without delay. On the top floor you could have plenty of skylights, as
many as you desire. Therefore, there would be no limit to
the supply of light. Having your sample
room on the top floor you also avoid the
noise, dust and irritating interruptions when
the sample room is on the first or second
floors near busy offices or stock departments.

The old-fashioned way is to have sample rooms on the
first or second floor. We inherited this condition from preelevator days.

A customer could not be asked to walk up

elevator days. A customer could not be asked to walk up more than one flight of stairs. Such sample rooms are usually dark and dingy and consume valuable space. All freight elevators lose time and power in passing these sample rooms. On the other hand, when the sample room is on the

top floor the freight elevators do not go to that floor.

In this connection, will say, most jobbers have decided

the old-time sample room showing each and every item costs
more than it is worth. It is not necessary
specialties these days for many merchants to study a 6-in. Heavy Strap Hinge before purchasing. As a result, in the modern sample room only specialties and new goods are shown. It is folly

to sample staple and well-known goods.

Elevators should be of large capacity and should be placed on the side of the building near the railroad tracks, so goods could be transferred on large platform trucks from the cars to the elevators and delivered imme-

diately to the proper department.

Be careful on the various floors opposite the elevators to leave plenty of space to temporarily store goods in case the stock clerks haven't time to put them just where they belong. Many stores in their desire to use every square

foot of space forget a certain amount of temporary storage room is needed on every floor.

It is also very important that your main aisles should be large enough to take care of your large an Alsles platform trucks. Room may be saved by Main Aisles of Ample Size.

making the lateral aisles smaller. Every large floor should have at least two main arteries—one running north and south and the other east

and west. In arranging your tiers of bins you should take light into careful consideration. Be sure to arrange them so as to have the most natural light. Inexperienced stockkeepers will arrange their large aisles next to the windows; in other

will arrange their large aisles next to the windows; in other words, have the aisles go around the outside of the department with the stock inside. This is not economical. The best plan is to have the bins go clear up the outside walls, having your aisles through the inside of the building.

Arrangement of Bins.

The bins should be properly numbered to correspond with the catalogue. When cars are received the bins should be ready for the contents of these cars. It often seems like waste of space to have room waiting for goods to come in, but this waste of space more than offsets the confusion resulting from making no preparation for goods coming in and storing them when they do arrive in any space that can be found. As a result of this latter system goods of the same kind are As a result of this latter system goods of the same kind are found in different parts of the building, and stock clerks have great difficulty in getting out orders and many errors are

de. Speaking tubes should be made with tubes of large diam-r and with large funnels in place of mouth pieces. Those eter, and with large funnels in place of mouth pieces. who have used small tubes hardly realize

how large tubes improve the service. There should be, of course, a central tel-Speaking Tubes and Telephones. ephone station with telephones in every department. Not only this, but the telautograph can be used to advantage. This not only works as rapidly as the telephone, but there is an absolute record in writing of the transaction. I predict this little electric machine will be

used very much more in the future.

Automatic tubes for conveying papers by compressed air from one department to another are a convenience, but are expensive.

A similar plan is to carry papers up the eleva-tors to the various departments and then ar-range tubes so they can be dropped down to the departments below. This system is not nearly so expensive, and it gives you work where you can Conveying Papers. start young boys distributing papers. These messenger boys become thoroughly familiar with the house, and if they are made of the right kind of material develop into first-class

Electricity is the best form of lighting. In a very large business money can be saved by operating your own electric

Elevators can be relieved of work by steel conveyors, in

which goods are dropped by gravity, all through the building.

Not only are the circular conveyors good, but the regular steel chute from floor to floor will be found of great advantage. It is surprising more jobbing Hardware houses do not use these chutes. After the first expense of installation these chutes cost retire for exercise The installation these chutes cost nothing for operation. They do not require elevator men. They do not require any power. They are always ready for business; no waiting is necessary, and a package that starts at the top makes a through trip. With occasional repairs they will last as long as your

Departments.

Heads of departments should have their offices in their departments. Each department should be run just as far as possible as a separate business.

The department manager should have supervision over all men in his department-both the office and stock forces

Department
He should have charge of buying goods for that department under general supervision of the head buyer of the house. Of course, this system and at the head of the department. The advantages of the system are he knows his stock, and can keep in touch with it much better than a buyer located in a far-away office.

This system develops first-class all-round men. This system develops first-class, all-round men.

The main advantage, however, of having your best posted man at the head of the department, in his department, is that the orders of that department are handled with more skill than by machine labor. The head man is in the department to be referred to at any hour of

the day. He teaches the clerks in that department better than they would be Studying Men and Developing Talent.

taught simply by a stock manager. It develops better clerks. In fact, it gives to that particular department the close relationship between the head man and the clerks which exist in a small business. It also gives the head man an opportunity to study the men in his department of the clerks which exist in a small business. ment and develop extraordinary talent.

The only danger to this system is in a poor department

building.

manager, who would not be a good disciplinarian or who was not sufficiently broad in his ideas to be able to attend to both the stock and office work at the same time. With a careful system of department records inefficient department Goods should also be packed by departments. This not

only prevents damage to goods by being passed from one de-partment to another, but it fixes the responsibility for errors

and bad packing. Packers pack the same kind of goods all the time, and, therefore, Packing Goods by Departments. become more expert. Another advantage

of packing by departments, if the goods are properly classified, is in the fact that the proper kind of goods will be packed together—goods that take the same freight rate. Therefore, freight bills to customers will be less. To illustrate this point, will say, in the basement natrally such heavy goods as Bolts, Hinges, &c., will be carried. These goods will be packed together and will be marked so as to take the lowest classification. When there are not sufficient goods in one department to make a box, they are sent to the general packing room and are packed with other goods.

An advantage in dividing a business into departments is

in the fact that if one department happens to fall behind in

Helping Out Slow Departments.

its work it is immediately evident. You can place your finger on the slow de-Slow Departments.

partment, and at once investigate the cause of delay and supply additional help if necessary.

It is also found with this system that a few nights' work on the part of certain departments will lead to their catching up, making it unnecessary for the en-

tire force to work.

The head of the department should naturally be fully posted on all things concerning his lines of goods. He would suggest selling prices for the salesmen, and would also post the salesmen on his lines. He would also take care of visiting customers, and sell them or see that they were properly sold the goods in his department. With this system of

Taking a Customer Through Departments.

departmentization a customer taken by a general salesman from one department to another, and the department manager or his assistant

helps the general salesman in selling the customer. obvious no general salesman can be as well posted on a line of goods as a department manager. Therefore, a dealer who is sold a line of goods by departments receives the benefit of expert advice and counsel in his buying. Then it is a pleasant change for a dealer in purchasing a complete line of goods to come in contact with the various department man-agers. Each department manager who takes up the work is fresh and naturally enthusiastic in regard to his own lines of goods, and anxious to make the best showing possible for his department.

By this department system an accurate record is kept of the number of employees and the total amount of salaries for each department; the number of square feet of floor space used, and the cost; the amount of stock carried and the amount of money used and the amount of "turn over" in that particular department per annum. To illustrate: In the Sport

Comprehensive Department Records.

ing Goods department the management of the business would know every month the value of the floor space used by that department; the total

of salaries; the amount of money invested in stock, and also the sales and profits of the department. To show the advantage of the system, if for any reason sales of the Sporting Goods department fell off 20 per cent. (as shown by the monthly records) and the salary account advanced 20 per cent., the management would immediately know something was wrong in this department. There should be a close relationship between the percentage of increase and de-

crease of expenses to sales, also of stock to sales.

With the proper records in a business so departmentized it can be told at a glance whether the head of a department is getting more efficient work out of his employees or whether is getting more efficient work out of his employees or whether he is letting up in his efforts; whether he is taking more stock to handle the same amount of business, or whether he is doing more business with a small stock. No department manager could be stuck with a large lot of seasonable goods and carry them over without this fact showing up very plainly in the department records.

Following this system of dividing into departments a large jobbing business is simply an aggregation of a number

large jobbing business is simply an aggregation of a number

of small businesses under the same roof, with the same gen-eral management and selling policy. This A Combination system leads to all the advantages of the small store, combined with the advantages of concentrated selling force and large pur-

of concentrated selling force and large purchasing power. The great saving in such an organization is in the fact that the various departments need the maximum number of men at different periods of the year. The house manager sees that each department is supplied with the proper number of men when needed, and those men are taken away as soon as business in that department decreases. is the great advantage a large house has over smaller houses. In small houses doing a local business there are periods of the year when the employees have nothing to do, and they

General Education of Employees.

cannot use them anywhere else. large business properly arranged, with

of Employees.

sales covering a wide territory, one department after another is busy, and men are shifted to points where they are most needed. Therefore, labor is kept constantly employed. This practice of fore, labor is kept constantly employed. This practice of changing employees from one department to another leads to the employees receiving a general education in all the various lines carried by the house.

The Sales Department.

The territory is divided into sections by States, and each tion is placed in charge of a sales manager. This sales section is placed in charge of a sales manager. This sales manager is in immediate charge of the salesmen in that particular territory.

The sales manager also looks after the trade, keeps track of increasing or decreasing customers' accounts, and writes the necessary letters to keep in touch with the customers of the house.

He also has charge of the salesmen's routes, looks after the salesmen's sales by towns, checks up the salesmen's ex-pense accounts, and does everything in his power to help the salesmen of the company achieve the largest and best results in the territory.

When a customer visits the house he is immediately waited upon by the general sales manager for his territory, who is familiar with the class of goods he uses and knows all the details of the local competition.

The Mail Order Department.

This is a separate and distinct department that handles

and develops mail or open orders from the trade.

In turn the mail order department is divided into sections corresponding with those of the sales department, certain men handling the mail orders from certain States. By this system both sales managers and mail order men become very familiar with the needs of the customers and the pecu-liarities of the trade in the section under their supervision. These various mail order men also make quotations.

It is much better for this work to be done by the mail order department than under the direction of the sales manager, simply because the sales manager has not time to look after the mail orders from and make quotations to the trade in his territory. If he looks after his salesmen and his accounts he is doing all that can be expected of him.

The General Catalogue.

There is a question in the minds of jobbers as to the success of the loose leaf catalogue to be distributed generally to the trade. In my opinion a solidly bound catalogue, issued at comparatively frequent intervals, would be better than a loose leaf catalogue. Experience

has shown that not 25 per cent. of Loose Leaf Catalogue Not Satisfactory. the retail dealers who receive loose leaf catalogues keep them up prop-

erly. The binders of these catalogues are very expensive; fact, almost as expensive as the catalogue itself. It is also very expensive to send change pages to a large number of customers. All this is wasted if the pages are not inserted.

A good system would be to issue a solidly bound catalogue to those customers who will not keep them posted, and a loose leaf or salesmen's catalogue to those customers who are sufficiently systematic and fond of work to change the

An approximate price-list has been found to be of advantage to the retail dealer. These pricelists, however, being separate from the regu-lar catalogue, are more or less troublesome. The time is ripe for the jobber who will print his approximate prices in the body of the catalogue he dis-tributes to his customers, using an easily learned selling

Goods are arranged in the catalogue according to the various departments of the house. In other words, the general catalogue is a collection of department catalogues bound together. Salesmen in writing up their orders send them in written up by departments. The ad-

vantages of this system are as follows: alesmen's the order reaches the house it is immediately divided into departments and sent to the various stock departments, and in a few minutes a number of stock departments are at work getting out the same order. The various departments work on the salesmen's original order. They can see in his own handwriting just what he orders. The system of copying for departments is slow and The system of copying for departments is slow and expensive. It is also full of errors. When an error is made

whether it was the salesman's error or an error made in the house in copying up the order. Goods of Same Kind Billed Together. der this system when an order is filled and put together and goes to the entry department all the goods of the same character are billed together. For instance, all Cut-

it is necessary to look up the original order and find out

lery, all Sporting Goods, all Tinware, all Shelf Hardware and all heavy goods will be invoiced together. They will also be invoiced exactly as they are packed.

Therefore, in opening a box a dealer will not have to skip all over his invoice to find the goods. This is also of

Advantages to the Merchant.

advantage to the pricing clerk because when he prices the invoice all goods in one line come together. It is of advantage to the dealer in checking with the invoice because

he will find all goods in a certain part of the catalogue come together on the invoice. It is also of advantage in our auditing of profit figuring department, because in going over the invoice seeking errors the goods are classified on the

copy of the invoice according to their price books.

To simplify the idea, if our catalogue was split up into its various departments and each department was split up we would have a number of complete stock and selling units, the only difference being that all the invoices for the entire business are written up in one department, and the selling for the whole house is in the hands of one force of salesmen.

The economy of a jobbing business conducted in this

manner, where one salesman sells many lines of goods in-stead of selling only one line, must be obvious to all.

Printing Plant.

In every up to date jobbing Hardware house there is necessarily a large printing plant in connection with its catalogue department. Their salesmen's catalogues are of the loose leaf variety. Their prices are printed on the pages and these pages are mailed to the salesmen as changes take place. It is only necessary for a salesman to insert these pages in his book when it is fully posted to date. What an improvement over the old methods when the salesmen were expected, but did not, post their catalogues from date to day by pencil!

The Bookkeeping Department,

Books are all kept by one department, but even here the idea of dividing into territories is carried out, certain bookkeepers working on the books for certain States.

All books are of the loose leaf variety. The ledgers are arranged by States, by towns, and then by customers. In other words all the accounts for a certain town are side by side and can be referred to at a glance. With this system it is an easy matter to find out the amount of business done in a certain State or the condition of accounts in a certain

The Credit Department.

This department, as its name implies, passes upon all credits. and has correspondence with customers in regard to their accounts.

The collection department is under the general direction of the credit department.

The Filing Department.

All correspondence is filed by States, by towns and by tomers. The numerous members of the Jones family customers. under this system do not come together, but are separated according to their States and towns

Orders are filed in binders and correspondence in upright

The Claim Department. This department is also divided by sections following the same sections as the sales department, with claim men for the various sections of the country. The claim department is under the direct control of the sales managers, and claims are handled in line with the selling policy.

The Traffic Department.

This department, as its name implies, looks after all incoming and outgoing shipments. All freight claims are handled in this department. It also had jurisdiction over the shipping room and wagons.

Remarks in General.

Every ship has its chart house. Every day observations are taken as to the location of the ship, then the position of

the ship is marked out on the charts.

If any business is to be kept off the rocks its latitude and longitude must be just as thoroughly and carefully taken. This cannot be done unless the executive of that business has a system of accurate records showing the volume of sales, the profits and the expenses of each department. He boliars and Cents Records.

This cannot be done unless the executive of that business has a system of accurate records showing the volume of sales, the profits and the expenses of each department. He must not only have these records.

ords in dollars and cents, but

I consider it of the greatest importance that he has it figured out on a percentage basis, and this percentage should be carried out to the fraction of 1 per cent. business increases 15 per cent. and your total expense for the entire business increases 15 per cent, where does it come in? Then you find the seat of the trouble by referring to your department records. Without department records you do not know what part of your business is making money

and what part is being conducted at a loss.

These records should at times be carried even beyond the department. You should figure the cost of selling certain

lines of goods in a department. How many jobbers here know the cost to them of carrying a Even Selling Certain Lines Should Be Figured. dozen cheap Screen Doors in

their warehouse for one year? If some of them would figure out the profit on those Doors and the cost of warehousing, insurance and taxes they would have something to think

What are the relations of your salesman's charges for drayage and excess baggage on sample trunks to his profits on the goods he sells from these samples? Have you ever figured that out? Probably some will decide it does not pay to carry samples.

Divide your cost of doing business into two heads: One,

Divide Business Cost Into Two Heads.

all the expenses of the house. other, all the expenses of your sales-men for salaries and traveling ex-penses. Keep this record year after

year, and see whether your expenses are growing with your salesmen or growing in the house.

One of the greatest dangers to any business is lack of harmony among the managers of that business.

indistinct division of responsibilities and duties by departments generally leads to this kind of friction. In your directors' meetings have each director responsibilities. Harmony in Management. Management. kind of friction. In your directors' meetings have each director report for his department, with the plain figures before all the directors.

Then have your general discussions afterward.

Have a department for returned goods. Have it carefully inclosed. There is great danger of pilfering in this department. Keep an accurate record of all goods returned and the customers who return them, and you will get some light on various sub-

When you have a large and very satisfactory account have the profit on that account figured, and may be you will

wake up. When you find one of your departments has no trouble selling practically Occasions for Investigation. all of a certain class of goods used in your territory, have the factory cost, the cost of handling and the selling price on these goods carefully

When anything is too easy and too prosperous look figured.

out for danger. All jobbers should charge extra for broken packages. Nothing breaks up stock and causes the loss of parts more than the habit we jobbers have of selling Extra Charge for Broken Packages. Broken Packages. at wholesale prices. We can-learn-something in this respect from the wholesale mail order houses who never break boxes, and who, therefore, have no trouble keeping their stock in good condition.

Carefully study your business and your methods and see whether you are adjusting your business to the exception of your trade and not the rule. I mean by this that the customer who is always complaining, who makes forcible complaints and who asks special consideration, impresses himself

upon your mind. You know him and correspond with him. He becomes an exception in your business. Does he not impress his Troublesome Customers. ideas too forcibly upon you and upon your

salesmen? On the other hand, the majority of your customers who make no complaints and who pay promptly are ofttimes forgotten. I believe it is the tendency of most jobbers to adjust their ideas to 20 per cent. of their sales, not the 80 per cent.

It is my opinion, when a retail account always requires special attention or special prices it is almost invariably unprofitable. If we had the moral courage we would drop such accounts, save time and worry and make more money. We can only get at the facts in regard to these accounts by careful analysis by department reports.

It is exceedingly important to have a monthly record of large business by States. Then you can see where you Monthly Records by States or Towns.

by States or Towns. States. Then you can see where you are growing strong and where you are becoming weak. If all the business is done in one State then you should have before you a monthly record of sales by towns.

Recently we have been experimenting with Graphophones for correspondence, and we believe the graphophone has a great future in business. It seems to me it would be especially valuable to merchants in small towns where expert stenographers are not easily obtained. They are worth your investigation.

Individually I have always opposed the system of sellbranch houses. I believe a strong central organization handling the business in deing goods through branch houses.

partments, can handle a business, even Branch Houses Not Favored. over a great area of country, more satisfactorily and more economically. A great

variety of goods and a heavy stock under one roof simplifies the keeping of stock and the filling of orders. I consider this advantage greater than either the advantage in time or

I believe the general trend of the times is toward a one price system, with possibly a lower price for quantities. This system is now being brought about by manufacturers' con-trolled prices and by the sale of jobbers' special brands.

To sum up this long paper, the difference between one jobber and another is narrowing down not so much to the question of prices, but to the question of good service, which means a large variety of goods from which to make a selection and the prompt and complete filling of orders with satisfactory merchandise.

Arkansas Retail Hardware Association.

I' was generally conceded by the Arkansas retail merchants present that their ninth annual convention at Hot Springs was one of the most profitable and enjoyable since the organization of that body, and it was likewise agreed that this was in no small measure due to the fortunate conjunction in time and place of meeting of the retailers', jobbers' and manufacturers' associations which made the services of a number of able speakers available. The addresses by W. T. Sanford, O. B. Barker, Charles H. Ireland, S. Norvell and other prominent jobbers on Wednesday were listened to by a large and attentive audience, which gave unmistakable evidence of its lively appreciation of the programme.





R. F. ROYS.

J. P. SIMPSON.

The headquarters of the association were at the Majestic Hotel and the meeting was held in the Majestic Opera House nearby.

President Plummer's Address.

Addresses of welcome and responses, the president's annual address, and the reading of the secretary's report occupied the first session on Tuesday forenoon, which was an open one. The interesting and able annual address of John A. Plummer, president of the Association, was as follows in part:

The business of a retail Hardware dealer comes nearer being a profession than that of any other mercantile pursuit; in all other mercantile lines it takes but a few months to familiarize yourself with the salient points of the business, but in the Hardware line this is not a fact. In this line it takes years of hard study to be fairly well posted. A Hardwareman has to learn just what is needed to build a shack or a mansion; what is the best roofing to use, the style of Locks and Hinges; how a flue should be built; the most convenient place for the Refrigerator, Sink or Range; how the barn should be built, its size, capacity, &c.

The poultry verd comes in for your attention; the lawn

The poultry yard comes in for your attention; the lawn claims a part of your time and study. You must know as to house furnishings. Even the young ladies will want you to know just the size Brass Ring they should use for such and such fancy work; the boys want to know all about the Bicycle, the size they should have; the sporting inclined man wants to know all about the different makes of Guns, Rifles, Cartridges, Shells, Fish Hooks, Trolls, Lines (and sometimes the best brand of fish bait)

times the best brand of fish bait).

You have to know the particular style of Plow, Harrow or Cultivator that will work best in such and such soil and crop; how many rods of fence it will take to fence off the cow lot, farm or pasture; how many Staples, Nails and Posts. Stoves and Ranges—you have almost to know the name of the miner who mined the iron. Pocket Knives, Razors and Shears you have to study hard and long; Granite Ware you must know the number of coats and its acid resisting quality, &c.; Iron Pipe and Steam Fitting Goods of a necessity have to be studied long. Pumps you will never know much about, no matter how hard you try. Tools and Implements of architecture demand years of study. You must, in fact, be a know all; for when any article is wanted and it is not known who keeps it, or, in fact, what it is, straight away the party goes to the Hardware store; so you see that it is more of a profession than any other line.

An Educational Campaign.

Now, since we are saddled with all of these studies, let's be generous and take on other studies that are being sadly neglected all over the country—that is the improvement of

our country, cities, towns, farms, homes, public buildings, roads, waterways and forests. In the rush for dollars in this country these things have been sadly neglected; the success of the country depends upon our keeping these up to the standard. There are too many young folks leaving the farm for the city life. The foundation of our State rests upon the farm; we must have farmers, farmers' wives, daughters and sons, and means must be devised to keep some of them on the farms.

We must commence a system of education on this line. To keep the young folks on the farm, the farm and home must be made attractive; some attention must be paid to the wants and desires of the children to make their life on the farm pleasant. Why should not the children in the country have such things as Lawn Swings, Tennis Sets, Croquet Sets, Hammocks, Lawn Furniture, like their friends in the cities? Why should not their lawns be cut nice and smooth with a Lawn Mower, the fences and outhouses neatly whitewashed? We must call the attention of the farmer to these things. Show him how much it will add to the pleasure of his household and himself, and how much it will add to the attractiveness and value of his farm.

We must advocate good roads, streets, clean premises, attractive homes, public conveniences, up to date schools and school houses, court houses, parks, &c., and that they be kept so as to be attractive. We want good, live, up to date farmers, mechanics, laborers, merchants, lawyers and doctors to come and live in our country towns and cities, and nothing will do more to make a man who is looking for a new location decide to cast his lot with you than to show him that you have a live up to date community. The undesirable citizen seldom makes a move to find a better location. It is hard to get him out of the community where he exists. It is the man who wants to better his condition, who wants to live in a progressive locality that seeks the new location. He is the man we want; to get him, we must be abreast of the times.

The Hardwareman in Politics.

It has almost become a maxim, that a merchant must have nothing to do with politics. Now this, like many other wise sayings, is a thing of the past. The merchant is nothing unless he is a good citizen. To be a good citizen, he must take an active part and interest in whatever is for the good and the advancement of his State, county, town or locality; he must use his influence to see that men of good, sound business ability are sent to our legislative bodies; for they make the laws that either make or undo our country. In the past years we have had much legislation that has been a detriment to every interest in the State. Our State is of a necessity a borrowing State; we must borrow money to develop its resources, build railroads and carry on our





JOHN A. PLUMMER.

C. E. TAYLOR.

business. To do this, we must give good security, safe insurance. The better the security the safer the insurance, the easier it is to get the money the cheaper the rate of interest will be. To induce capital to come to us, we must convince capital that we want to and will treat it right.

Railroads Should Be Fairly Treated.

We need more railroads to develop our State, more factories to turn our raw material into money producing articles. We are getting but a very small percentage of what we should in this line, and it is largely if not solely due to the fact that it has become quite popular for everybody most to fight the railroads and capital. The slogan of war of the politician is, "Down with the railroads!" They want to make them carry our freight and passengers at a rate that does not leave them a fair return upon their investment and risk, and demand that they build depots and sidings where there is not a sufficient amount of trade to

justify the outlay, and pass laws that are unjust to them. We need the railroads and capital. Other States are wanting them, and they are going where people show by their actions that they will deal fairly with them. We need them to penetrate new sections; to make farm and timber lands treble their present value; to make towns and cities where now there is only a wilderness. Let's give them the glad hand and convince them that we, after giving all sorts of inducements (in resolutions), will not so soon as they spend their money with us, commence to demand that they do things which the business will not justify. Let them make a fair profit on their investment, still have a line of justice and right that all must come to; first give them jus-

tice and then demand from them justice.

Let's show them that there are men in this State who are determined to relegate the man whose only battle cry is "down with the railroads; down with capital!" to the rear, where he justly belongs. That we are going to send men to our legislative bodies, broad gauged men, men who will endeavor to pass laws that will encourage capital to come to us; that will bring more railroads, more factories; that will bring those to us who want, in themselves, to be fair and just; that we are going to send men who have the interest of the State at heart, men who are a success, progressive men, men who want to see the grand State of Arkansas take her just rank with the foremost of her sisters; that we are going to let the failures stay at home.

Secretary Taylor's Report.

The report of Secretary C. E. Taylor contained several suggestions for the furtherance of the work and aims of the Association. Among other things recommended was one with reference to the location and time of meeting of the next annual convention, which was favorably acted upon at a later session. The hope was expressed that there might be a large attendance from the state of Arkansas at the annual convention of the National Retail Hardware Association to be held next year at Milwaukee, regardless of the result of the home campaign for State-wide prohibition. It was stated that the few complaints of grievances reaching the Secretary's office during the year had in each instance been satisfactorily disposed of, and recognition was made of the efficient aid rendered by the traveling men who have been admitted as associate members of the association. Continuing the report was in part as follows:

You have already been advised in my secretary's letters from time to time of the progress of work which has been done by the Hardware Associations of the United States to defeat the proposed legislation in favor of parcels post. Congress has adjourned without enacting such a law, and perhaps our associations can now enjoy a breathing spell for a while.

Mutual Insurance.

Investigation at our last annual meeting disclosed the fact that in our State only 14 concerns were carrying Hardware mutual insurance. In conference with the Executive Committee the secretary was directed to endeavor to make an arrangement with one of the larger of the Hardware mutual insurance companies whereby that company could enter the State in accordance with the requirements of our State laws and solicit business from our members. Also to accept business from other dealers in Hardware, Vehicles and Implements, provided, they will join our association. In other words, to sell no insurance to dealers who are not members of our association. Negotiations looking to such arrangement were opened with the following Hardware mutuals: The Minnesota, the Iowa and the National. They all gave careful consideration to the matter and each com-Investigation at our last annual meeting disclosed the all gave careful consideration to the matter and each company was apparently anxious to make the arrangement suggested, but each company in turn has advised us that it cannot at present make such arrangement with us for the reason that our State laws are too drastic for them to meet the requirements. The Iowa Company in particular went into the matter carefully, but its secretary who had corre-spondence at length with the insurance commissioner of our State, Hon. A. E. Moore, advises that they would be very greatly handicapped in entering the State under the require ments of our laws and that at present they cannot attempt to do it.

Finding that it was not practical at the present time to have the companies come into the State, I endeavored to ascertain whether our association could put a man in the field to secure new members and let him accept applications for mutual insurance as he went from town to town calling on the dealers. Chapter 3, Sections 26 and 29 of our insurance laws seem to be very full of penalties for representa-tives who solicit business for companies unauthorized in Arkansas. The wording of the law is very broad. It says:

Any representative forwarding applications or in any other way transacting business for any insurance company not in this State is liable to the penalty of \$500 for each month during

which the Illegal business was transacted, and after such representative shall be deemed guilty of a misdemeanor and upon conviction shall be fined in any sum not less than \$500.

The Iowa Association writes us that there is no question The Iowa Association writes us that there is no question as to the right of the individuals of our association to secure mutual insurance and to use the United States mails for that purpose. He stated that the matter had been tested before the United States Supreme Court and that the gist of this decision is that a man can purchase his insurance just as he does his sugar or Nails, wherever he pleases. He stated that if we should put out a representative they would be glad to get out some printed matter for him which he could hand to prepased members explaining the whole situation. could hand to proposed members, explaining the whole situation to them. He could state explicitly that the insurance company is not permitted to enter the State of Arkansas to solicit business; neither can they have an authorized agent to solicit. The insurance people suggest that the dealer to solicit. The insurance people suggest that the dealer could make out his application and forward direct to the company for consideration.

my reasons for wanting mutual Hardware insurance made popular are twofold. First, the mutual companies are offering good insurance for less money than the old line companies. Second, a properly directed campaign for new members on the basis outlined above, dependent upon membership in our association, would mean that we would during this year ahead of us receive a great many new members. I believe we will never grow as we should as an association until we are able to offer to many dealers who now should belong to our association something attractive, like the mutual insurance proposition. When we do that we will build up our association rapidly.

Freight Rates.

At the last convention the secretary was directed to endeavor to make arrangements with A. R. Bragg, manager of the Merchant's Freight Bureau of Little Rock, to audit expense bills for over charges, quote freight rates, look after claims, &c., for our members. On going into the matter thoroughly with Mr. Bragg I found that such an arrange-ment was not possible nor advisable for two reasons; on account of the cost to us and on account of the fact that the Bureau for which Mr. Bragg is manager could not arrange for him to give to our association the time that such work would have demanded of him.

Legislation.

The Legislature will meet next January, and it seems to the writer that it will not only be advisable, but show good judgment on our part as business men, to give some time in our discussions to matters that may be suggested that committee. Surely the members of the Legislature will be glad to listen to suggestions from our association. If our members can agree on the need of any suggested laws or the repeal of laws now in existence, we should be able to exert a strong influence in the passage by the Legislature of any such helpful measures.

Convention Committees.

The following committees were appointed by President Plummer to serve during the convention:

RESOLUTIONS: J. P. Simpson, Malvern; W. H. Worneck, Magnolia; W. W. McMinn, New Port.

PRESS: H. E. McRae, Hot Springs; C. E. Taylor, Little Rock.

TIME AND PLACE OF NEXT MEETING: J. F. Maxey, Ozark;
Elmore West, Helena; R. P. Graham, Fordyce; R. W. Merriweather, Paragould; Frank B. Gregg, Little Rock; Dan Watkins,

AUDITING: W. A. Jackson, Dardenelle; Charles Pittman, Pre

cott; Harry Hankins, Jr., Monticello.

Nominating: Hamp Williams; Hot Springs; K. G. McRae,
Hope; H. E. Lynch, Clarendon; C. H. Stout, Black Rock; W. T. Richmond, Ft. Smith.

TO CONSIDER REPORT OF SECRETARY-TREASURER: E. E. Mitchell, Morrillton; W. A. Jackson, Dardenelle; Hamp Williams, Hot

Extending Credit to Customers.

A paper on the subject, "How Can We Improve the Present Credit Condition of Our Business?" was read by E. E. Mitchell of E. E. Mitchell & Co., Morrilton, and a former president of the association. The paper was as follows, in part:

The very first thing to do is to become careful in extending credit. If you are now careful then the next thing to do is to get more careful. In extending credit we should take is to get more careful. In extending credit we should take into consideration, first, Honesty. If a man can pay, but will not, he is a bad customer. A customer should not be so good as not to be required to pay his account when due. Second, look well to a man's ability to pay, honesty alone does not pay debts; if he does not produce anything to pay with, he is a good man to keep off your books. Third, consider his probable income in connection with his fiabits, responsibilities and expenses. He may be a willing payer and his income great and yet prove a bad customer because and his income great and yet prove a bad customer because of bad habits, or big responsibilities and expenses such as a large, extravagant family, &c.

Clear Understanding.

Have a clear understanding. If we are selling a customer who we have some doubts about, but for some reason we do not wish to ask him for security we should have a clear understanding with him as to what line of credit we are willing to extend him, so as to be able to hold him within reasonable bounds, without friction. Without some agreement such men are apt to think their credit better than it is, forcing us to curb them after they are in debt to us, which so often offends, and they retaliate by not paying their account.

If credit is extended on a basis of paying any time you please, or "that's all right" manner, the customer is very apt to carry out that spirit, and consider that his bill is not due until it is entirely convenient for him to pay it.

due until it is entirely convenient for him to pay it.

We often hear the expression, "goods well bought are half sold." This expression has a twin brother, much larger in point of value, yet a stranger to many, namely: "Accounts well made are half collected."

Do not get too anxious to sell goods when they are to be

Do not get too anxious to sell goods when they are to be charged in order to increase the volume of your business, as you might have the experience the preacher complained of when his congregation talked of raising his salary. He said he did not want it raised as it was then taking so much of him time to collect what they had promised him that he feared that he would not have any time to devote to the preparation of his sermons if he had more salary to collect.

Collecting Tactics Vary.

It is hard to have any given set of rules to collect accounts by. Every customer is different, the same tactics that will work successfully on one will not collect money from the other. Again each merchant or collector can best collect accounts by not trying to ape some one else, but have some originality of his own in approaching the customer.

We think that every customer should be seen or written to when his account is due and asked to settle either at once or some stated time, and that statements of all past due accounts should go to every customer at least once every 30 days. If sent by mail to a man that a mere statement does not appeal to, write something specific and to the point on the bottom of the statement, and if you do not hear from that, follow it up with a letter or your collector.

Charles H. Ireland's Paper.

Chas. H. Ireland of the Odell Hardware Company, Greensboro, N. C., read a very thoughtful and suggestive paper under the title, "What? Whither?" in which reference was made to the momentous changes now going on in the world's affairs, changes that were, he believed, "the first rumblings prior to awakenings of the dawn of a new and better day, a time for which the race has sighed, dreamed and hoped for." Mr. Ireland expressed the view that in the great part which the United States shall perform in the world's future progress the South would be most conspicuous, and "will yet again lead this nation in those things that will make for its widest and best progress." Concluding, he said, that while the retailer, like the farmer, must ever be the bone and sinew of the country, he must by a due appreciation of his true worth fortify himself against undue competition by the observance of the following rules:

1. By a settlement in his own mind of the dignity of his calling. He should never forget that he is not a junk dealer, and the meritorious act of passing an article across his counter and sending it out wrapped in paper with his imprint upon, should add materially to its intrinsic value. Moral, don't buy junk if you don't run a junk shop.

2. If he is not a junk dealer then it should be his aim to let the community know it. Profession amounts to nothing unless the life back of it bolsters up the same. The only correct social and commercial position for the Hardwareman in any community is with the bank, factory and railroad presidents and merchant princes of the community, and if he happens to have his lot cast in a community where none of this class reside he should embrace all within himself and feel perfectly easy as to his right to maintain the dignity of his resition.

his position.

3. By all means he should belong to his local and State associations, because in union only there is strength, and he should lend all aid in the effort to control department stores and catalogue houses.

But let him, while his eyes are elevated to see the dangers that threaten him from the large catalogue house, take care to make his place of business so clean and attractive that ladies will resort there, rather than shun it. Nor forget that the department store makes a specialty of household goods, and ladies buy these goods only; that women are interested in Fancy China and Cut Glass and Silver Ware more than in Steel Plow Shapes and Trace Chains; that a Cook Stove will look just as well exhibited in the back of the store as in the front; that women do not cook by choice but perforce, and that when they go out for a

pleasant shopping trip they do not want a reminder of what's awaiting them at home; that drug stores sell Razors and Pocket Knives; that the law of the Medes and Persians is no longer applicable, hence a man can afford to put in a supply of Cut Glass and Sterling Silver and Chaing Dishestory, the purpose of cultivating the best patronage in his town.

for the purpose of cultivating the best patronage in his town. That the best way to oppose a catalogue house is to carry a well-assorted, up to date, carefully selected Hardware stock in your own town. That it will not harm his business to display his goods nor fear competition by plainly marking his prices in figures on the same. That the secret of the 5, 10 and 25 cent store is its ability to properly angle a Knife or Hatchet on the counter. That this is the twentieth century and things move on a pace. That the duty of the present hour is personal, and upon the manner in which we discharge it rests the destiny of this great land of ours. I know not what others may do, but I shall esteem it a privilege of great opportunity to answer the What of life by the trend which shall leave no room to doubt as to the Whither.

The Local Jobber and What He Deserves.

A very interesting and forcible address was that by W. T. Sanford of the Roberts, Sanford & Taylor Company, Sherman, Texas, and newly elected president of the Southern Hardware Jobbers' Association, on "The Local Jobber and What He Deserves." After touching at some length on catalogue house competition and its mischievous effects, Mr. Sanford spoke in part, as follows:

The jobber occupies the same relative position with the retailer that the retailer does with the consumer. Did you ever think of that? Did it ever occur to you, my friends (and I ask the question in all the courtesy and frankness which the occasion demands), that, while you are making a war upon the catalogue houses, perhaps you are inflicting upon your home jobber the same injustice that you complain of on the part of your customer?

Your Home Jobber

is a citizen of the same great State as yourself. He is contributing his part to the maintenance of the municipal, county and State governments. He is supporting all the public institutions in which you are interested. He stands behind you in times of financial distress. He is your fellow citizen, your neighbor and friend. With you he is working for the advancement of the same people and for the upbuilding, the honor and the glory of the same proud commonwealth. Is he not entitled, therefore, on equal grounds to your liberal patronage? Does he get it? You will observe that I say on equal grounds.

I am aware that no local jobber in the Southwest is prepared to handle the entire account of a large retail Hardware dealer, nor does any assume to do so. There are lines which must necessarily be secured in foreign markets. There are special brands of goods which have been widely advertised for a number of years, which cannot be bought in the home markets; there are some goods for which there is only a local demand, which the home jobber cannot afford to stock; there are lines in which the home jobber cannot offer as large and varied assortment as his foreign competitors, and consequently the retail dealer must go outside his State to supply his wants.

But the question which I would emphasize is this: Do you buy from your local jobber everything that you can buy at the same price or cheaper, freight considered, as from his foreign competitor? If not, I ask with the utmost consideration, are you treating him fairly, or as the President would say, are you giving him a square deal?

A Powerful Ally.

Has it eyer occurred to you what a powerful ally you have in your home jobber, or what a tremendous loss of profit you should sustain if he were removed from the field? As you anticipate the wants of your customers, so he anticipates your requirements and frequently ships in an enormous stock of season goods months before the demand begins, that he may fill your orders when your own trade opens up. You can gauge your purchases by the conditions of the crop at harvest, without incurring a single element of risk, but he has to stock the goods long before the ground is plowed, and if crops fail he must carry over the goods and stand the loss of interest on the investment. Or late in the season you can order from hand to mouth, promptly supply your customers without carrying over any surplus stock.

With his stock to draw from and with the terms which he offers, you can sell an article for cash, order it by telephone, get it in a few hours by express, make your profit, have the use of the money for 60 days and never have 1 cent invested. A retail merchant if he will patronize his home jobber as freely as the conditions justify can do the same amount of business on half the capital necessary where he sends to foreign markets for his goods.

Buying at Home

As a jobber, I have made it a rule never to buy away from Sherman anything that I could buy on equal terms at

I buy what I can in Texas, and I buy everything that I can in Arkansas—and I am pleased to say that I buy a good deal in Arkansas. If I were in the retail business I would buy at the same price every dollar's worth of goods from my home jobber. I will go a little further and say I would be willing to pay my local jobber a little more, because what I might lose in price I would make up by having him carry the stock, thereby saving time, interest on investment, freight investment, insurance, taxes, and the risk of a decline.

Existence of Home Jobber Keeps Prices Down.

There is another fact which I wish to emphasize in this connection. The home jobber is the greatest protection the retailer has against paying unreasonably high prices for his goods. Remove the home jobber and you would find some enormous and sudden advances. You wouldn't read about them in the trade journals, but you would hear about them when the foreign drummer came around.

On Nails, Wire, Horseshoes and similar heavy commodities, you would pay from 15 to 75 cents per cwt. more, according to the differential between carload and less than according to the differential between carload and carload rates; you wouldn't get a cent more for the goods, carload rates; you wouldn't get a cent more for the goods, and your stocks would be broken half the time. Therefore, while you may not fully realize it, the average retailer, situated at a great distance from the large jobbing centers is in a large measure dependent upon the local jobber for his success in business.

If it is true, and the fact is not debatable, that it is better for the retailer to buy an article from the local jobber, if he can buy it to an advantage, then it follows that the more items he buys from the local jobber at a favorable price, the more is he benefited; consequently, it is to the interest of the retailer not to weaken his home jobber through lack of patronage, but to strengthen him by his patronage and his influence, thereby enabling him to extend his busings increase his stock buy in larger quantities and chapper. ness, increase his stock, buy in larger quantities and cheaper, and therefore become of more benefit to the retailers in his territory.

Address of J. E. Smith.

J. E. Smith, vice-president of Simmons Hardware Company, St. Louis, and president of the Business Men's League of that city, at the invitation of the convention, discussed the need of a greater inland waterway. He outlined the plans of the Lakes-to-the-Gulf Deep Waterway Association, which is endeavoring, through the cooperation of the Governors of the States, Mayors of cities and towns and commercial and river improvement organizations, to hasten definite favorable action by Congress on a Rivers and Harbors bill, carrying sufficient appropriation for deepening the Mississippi River. Of this movement President Roosevelt has declared that the building of this lakes-to-the-gulf deep waterway, which carries with it the improvement of the Mississippi River. is of the first importance among all the meritorious river improvement projects. Mr. Smith urged action by the convention indorsing the project, and invited the attendance of prominent men at the Chicago convention of the Waterways Association, which will be held October 7, 8 and 9 next.

The association unanimously adopted the following resolution:

Resolved, That we extend to J. E. Smith of St. Louis, president of the Business Men's League of that city and vice-president of the Simmons Hardware Company, our thanks and appreciation for his very able and instructive address on "The Need of Government Aid for Deepening National Waterways"; and be it further

Resolved, That the Federal Government should begin at once the proposed Lakes to the Gulf deep waterway, so as to secure for the Mississippi Valley States easy and cheap transportation to tidewater and to relieve the congestion to our commerce from which we have suffered so grievously during the past few years. This waterway is of sufficient importance to demand the aid of the Government, and such aid should be extended on a definite and continuing plan until it is completed; it is further Resolved, That the above resolution should be sent to the President of the United States and to all United States Senators

and Members of Congre

The Question Box.

Lively interest was developed at Wednesday's meeting when the question box was taken up under the able direction of President A. T. Stebbins of the National Retail Hardware Association. The first question presented related to mutual fire insurance and the protracted discussion of the subject which followed disclosed a strong sentiment in favor of the Hardware Mutual plan which, however, is scarcely feasible at the present time in Arkansas on account of the drastic nature of Insurance Laws in force in that State. Spirited discussion was aroused by consideration of the question, "Is it best to have strictly one price for every customer?" Opinion was much divided as to the practicability of this policy, but an interesting account of its successful practice was given by a member who has permanently adopted it after a satisfactory trial. Other questions considered were the Hardwareman's credits, uniformity in size of catalogues and post office box rent. As a result of the discussion of the latter topic the following resolution was adopted:

Whereas, It appears by the published reports of the Post Office Department that our Government has collected over \$3,500,000 for box rent in our post offices throughout the country during the last year, and

Whereas, This vast sum is demed to be an unjust tax on the business interests of the rural communities. Now, therefore, be it Resolved, By the Retail Hardware Association of Arkansas, that we hereby protest against this unjust discrimination against the patrons of post offices in smaller towns and villages who do not have mail delivered at their doors, and respectfully request that this matter be presented to the post office authorities for their careful consideration; and be it further

Resolved, That our secretary send a copy of these resolutions to our Senators and Representatives in Congress, with the request that they use their best endeavors to remedy this evil, which seems to us to be class legislation.

Standing Committees.

The following standing committees were chosen:

The following standing committees were chosen:

Legislation: Hamp Williams, Hot Springs; J. F. Maxey, Ozark;
John M. Pittman, Prescott.

Insurance: W. A. Jackson, Dardanelle; F. B. Gregg, Little
Rock; Joe B. Hughes, Beaton; C. E. Matthews, Mulberry;
B. J. Underwood, Stuttgart; P. W. Johnson, Pocahontas;
M. E. West, Helena.

Programme Next Convention: H. E. Lynch, Clarendon; V. R.
Harris, Fordyce; F. E. Pharr, Texarkana; R. N. Vall, Morriton; G. W. Edmondson, Des Arc; W. W. McMinn, Newport; C. E. Taylor, Little Rock.

Membership: J. Haraison, Augusta; C. H. Stout, Black Rock;
W. H. Warnock, Magnolia; Herman Carlton, Lake Village;
Will Hill, Charleston; Isaac J. Morris, Mountain Hone;
George Shearer, Mulberry; Tom Dillohunty, Lockesburgh;
Dan M. Watkins, Mena.

Jobbers' Sales to Consumers and Non-Hardware Dealers.

Jobbers selling to consumers was the subject of a good deal of discussion at one of the sessions, many of those present contributing their experience and views. It was finally resolved that all complaints of this nature should be referred to the secretary and that he in turn take the matter up with the offending parties.

The following resolution was also adopted:

That this convention declare at this time that we do not approve of the action of any jobbing house that accepts business from consumers or from dealers large or small that do not carry Hardware in stock.

Cards containing this resolution will be printed and distributed among the members of the association.

Enlistment Committees.

Valuable assistance in the numerical development of the association is rendered by the enlistment committees comprising traveling men who are associate mem-These committees for the ensuing year will be constituted as follows:

Constituted as follows:

HARDWARE DIVISION: J. M. Lofton, chairman, Chicago; W. G. Barnes, St. Louis; H. M. Todd, Louisville; M. C. Talley, Chicago; R. P. Young, Memphis, Tenn.; W. A. Cook, St. Louis; B. Morrison, Little Rock; P. N. Warren, Memphis; Otis J. Johnson, Little Rock; H. N. Billinger, St. Louis; J. H. Wall, St. Louis; William R. Neblett, Memphis; O. C. Word, Fort Smith; A. S. Sutton, Little Rock; Frank Lyon, Little Rock; M. O. Martin, St. Louis; J. A. Mason, St. Louis; T. D. Rowan, Louisville; E. W. Horne, Memphis.

VEHICLE DIVISION: J. M. Hughes, chairman, Memphis; E. B. Richards, Memphis; Frank Laster, Fort Smith; T. B. Imgram, Florence, Ala.

IMPLEMENT DIVISION: H. L. Taylor, chairman; Louisville; W. E. Wadsworth, Springfield, Ill.; G. L. Turner, St. Louis; Geo. S. Hooper, Memphis, Tenn.; Lafayette Burris, Memphis; H. P. Alexander, St. Louis; O. M. Wylie, Longview, Texas; G. G. Armistead, Louisville; Lewis R. Hardy, Memphis; H. A. Guild, St. Louis.

Stove Division: J. C. Stephan, Evansville, Ind.: H. W. Giers, Memphis; F. E. Moraney; I. Rosenthal, Belleville, Ill.; J. Balley Gordan, Rome, Ga.; Geo. C. Robinson, St. Louis; John J. Johnson, St. Louis; W. N. Brandon, Nashville.

HARNESS AND SADDLERY DIVISION: P. K. Gunter, chairman, Little Rock; C. L. Trolinger, Kokowa, Led. V. J. V. M. Green, Louisville.

wille. MISCELLANEOUS DIVISION: James K. Lewis, chairman, Little Rock; C. L. Trolinger, Kokomo, Ind.; J. D. Waters, St. Louis; T. T. Johnson, Pittsburgh; J. C. Britt, St. Louis; Duff Green. St. Louis; W. A. Smith, St. Louis; F. W. McMiller, Memphis, Tenn.; R. S. Anderson, Little Rock; Paul R. Litzke, Little Rock; T. C. Cole, St. Louis; H. S. Speck, Little Rock; J. H. Martin, Little Rock.

Election of Officers.

The election of officers resulted as follows:

PRESIDENT, R. F. Roys, Russellville.

First Vice-President, J. P. Simpson, Malvern. Second Vice-President, J. B. Hurley, Warren. Secretary-Treasurer, W. L. Harlan, Little Rock.

John A. Plummer, Marianna; C. E. Taylor, Little Rock, and N. T. Richmond, Fort Smith, were elected to fill places of three retiring members of the Executive Committee.

Next Meeting at Fort Smith.

In response to an urgent invitation extended by the Commercial Club of Fort Smith through representative Hardwaremen present at the convention, it was decided to hold the next annual meeting in that city. It was suggested that by going over to the west side of the State many dealers in the Northwestern portion of the State might be induced to attend and become members of the association.

Convention Notes.

W. L. Harlan, Little Rock, the newly elected secretary of the association, presented the report of the proceedings of the last national convention at St. Louis. Mr. Harlan went into considerable detail, and his report was listened to with interest and attention.

An address which held the undivided attention of the convention at its morning session on Wednesday was delivered by J. D. Kenyon of New York City, vice-president of the Sheldon School of Scientific Salesmanship. Mr. Kenyon spoke for an hour upon the science of salesmanship and its application to everyday transactions in the distribution of goods.

An appreciative tribute to the helpful influence of the trade press was voiced by two members, who told of the valuable suggestion and information they constantly gleaned from the leading Hardware journals. Speaking from his own experience, Hamp Williams said that every Hardware merchant should urge his clerks to read them also.

"The Development of a State" was the subject of an interesting and suggestive address of the Hon. George R. Belding, Hot Springs, president of the State Fair Association and Industrial Exposition of Arkansas. Mr. Belding referred to the vast undeveloped resources of the State, and called attention to the third annual State fair and industrial exposition to be held next October, which he urged the Hardware merchants to make as large a success as possible.

By a two-thirds vote of the convention Article XI section 1 of the constitution, relating to the time of holding the annual convention, was changed to read as follows: "The meeting of this convention shall be held at any time in the months of May or June, as may be fixed each year by the Executive Committee." This action was taken to secure such latitude as would enable the fixing of dates that would best harmonize with those of neighboring States, it being desirable to have them run as far as possible in consecutive order.

The local retail Hardware houses vied with each other in preparing attractive window displays, and the competitive efforts thus evoked resulted in a showing creditable alike to the trade itself and to the city.

A. T. Stebbins, president of the National Retail Hardware Dealers' Association, was the recipient of a handsome alligator traveling bag, which was presented to him by President John A. Plummer of the Arkansas State Association as a personal token of regard and esteem as well as memento of the occasion of his visit.

No exhibit of goods by manufacturers and jobbers was shown at this meeting, but the Arkansas retailers are considering the advisability of inviting displays to be made at their next convention. The question has been referred to the officers and Executive Committee with power to act.

Addresses by S. Norvell, president of the Norvell-Shapleigh Hardware Company, St. Louis, Mo., were interesting features of both the retailers' and jobbers' meetings. A genial group of salesman from this house was also in attendance to extend greetings to their friends and customers among the assembled dealers. This delegation consisted of J. P. Walker, M. O. Martin, J. A. Mason, F. Millard, C. D. McManus, W. A. Cooke.

A pleasing incident of the meeting not down in the official programme occurred in the final hour of the closing session. It was the presentation by the association of a silver tea service to C. E. Taylor, the retiring secretary. Overcome

with surprise and emotion by this unexpected tribute of love and esteem from his friends and associates, Mr. Taylor was for the moment unable to respond, but in a brief pause, gathering his composure, he acknowledged his appreciation of the gift and the spirit prompting it, in words that rang with the eloquence of feeling and kindest sentiment of kindred sympathy.

An attractive collection of photographs illustrating the line of Hardware store fixtures made by the J. D. Warren Mfg. Company, Chicago, was displayed in the lobby of the Arlington Hotel. These were examined with interest by a large number of delegates and visitors, and information sought respecting them was furnished by J. D. Warren, whose careful study of the problem of arrangement, disposition and display of Hardware stocks has made him an acknowledged authority on this subject.

Headed by James E. Smith, vice-president, who delivered an interesting and able address before the convention on the subject of "Waterways," the following representatives of the Simmons Hardware Company, St. Louis, were present: C. L. Rierson, W. G. Barnes, J. H. Wall, H. N. Bellinger and H. S. Speck.

Success Chemical Fire Extinguisher.

The H. W. Johns-Manville Company, 100 William street, New York, has recently put on the market the Success Portable Fire Extinguisher. It is made of extra heavy Lake Superior cold rolled copper, securely riveted and reinforced by heavy shoulders of solder, every one of which is tested to withstand a pressure of 350 lb. to the square inch, or four times the required strength. The joint where the cover is attached is ordinarily the weakest part, but the method of attaching the dome to the body of the shell is said to make that joint the strongest part in this extinguisher. The large wheel at the top of the machine is a convenience in opening and closing it, at the same time serving as a base on which to rest it when reversed, as in use for playing on a fire. The frame work, or bottle holder, containing the supply of sulphuric acid, is cast brass and virtually indestructible. The bottle of standard size and type for holding the acid is obtainable anywhere in case of accidental fracture from any cause. The hose, tested to 400 lb. to the square inch, cannot be pulled off and is only detachable with a wrench, being joined to the body by a swivel ground joint. The nozzle is said to be absolutely noncorrosive. No mechanical force is needed to put the apparatus in action; it is simply turned bottom up and the resultant mixture of sulphuric acid in the three gallons of water charged with bicarbonate of soda develops instantly force enough to throw a chemical stream 50 ft. This chemical stream acts as a blanket and smothers fire which water cannot reach. By means of a lead stopper, fitting loosely, the flow of sulphuric acid is regulated to just the correct amount of gas generated at all times, making explosion impossible, the company states As this extinguisher neutralizes the acid before it leaves the machine, the stream will not injure material with which it may come in contact.

The General Electric Company.

The General Electric Company, Schenectady, N. Y., has added to its product some new designs of luminous electric radiators, both portable and mantel types, and tubular air radiators for domestic and central station heating. An illustrated booklet has been issued, giving catalogue numbers with ratings, capacities, voltages, price lists, &c., which will be of much assistance to the prospective purchaser. The booklet also refers to the balance of the company's line of electric heating and cooking devices, including flat irons of various types, water heaters, combination cereal cookers, tea kettles, percolators, chafing dishes, stoves, frying pans, grids, ovens, &c.; cooking and baking outfits, consisting of combinations of the most desirable apparatus, are also described, and such specialties as cigar lighters, shaving mugs, heating pads, corn poppers, &c.

Hoag Combination Padlock.

Arthur W. Hoag, 145 East Twenty-third street, New York, has recently brought out the patented Hoag combination padlock here shown actual size. It is substantially made of cast bronze metal, machined and polished. The combination is set on three numbers, 0 to 30 inclusive, as indicated on the dial, the various possible combinations reaching into the thousands. While the lock as sold is usually set at certain figures at random, the construction is such that its possessor may at any time alter the combination as frequently as there is occasion for it. This is easily done with the right side of shackle swung back, as illustrated, when with a slender screw driver inserted in the 3-16 in. opening a screw is receded, which enables the entire dial mechanism to be taken out, Back of the dial are three disks, a slight change in which by the loosening of a screw entirely alters the combination, full directions for accomplishing which accompany each lock. To open the lock, assuming it is set on 25, 20, 6, the dial is revolved to the left first to 25 three times, then to right to 20 twice and finally once to the left to 6, so that in each instance the dial graduation is in alignment with the line in center of outer beveled rim, when

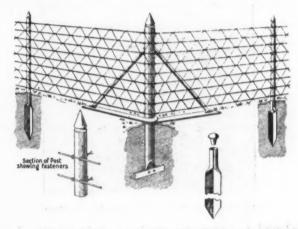


Hoag Combination Padlock, Open.

a partial turn to the right unlocks and throws the hasp upward 3-16 in. and backward, say, ¾ in. The locks are put up singly in pasteboard boxes, with the combination figures and explicit directions how both to unlock and change the combination. It is regularly furnished in polished bronze, but if necessary to match trim can be finished specially as required at an additional cost, dependent on the finish.

Milwaukee Steel Fence Post.

The Milwaukee Steel Fence Post Company, Milwaukee, Wis., is offering the metal fence post which is herewith illustrated. The distinctive feature of the post is its separable base, so constructed as to be easily driven into the ground. The lower end of the base is trough shaped and pointed, while the upper end is formed into a ferrule, in the top of which a metal cap is fitted for the purpose of driving it into the ground. It is stated that but a few strokes of the sledge are required to drive the base to its full depth of 2 ft. into the ground in any soil. When driven in position the metal cap or driving plug is removed and the post inserted in the ferrule. The posts are made of 11/4-in. high carbon steel tubing, without reinforcements; but to make their rigidity doubly sure the tube is filled with cement, which in addition to added strength prevents rusting on the inside. Posts are furnished thickly coated with black Metalastic paint, which is said to make a lasting coating. Corner, end and gate posts are made of the same material as the line posts, but are larger, being 2% in. in diameter and set 3 ft. in the ground; they are likewise filled with cement. Special bracing is provided for these posts, consisting of steel tubes, and in conjunction with flat steel ground braces at the bottom of the posts an angle bar is riveted which



Fence Erected on Milwaukee Steel Fence Posts.

contributes to its rigidity against strain. The manner of attaching the fencing is shown in the illustration, the ties used being of 14-gauge galvanized wire. The line posts are made in lengths from 3 to 5 ft., with \frac{1}{2}ft. graduations, the 4-ft. length weighing 11 lb. Bases 3 ft. long for use in swampy ground are supplied at a slightly advanced cost.

The Sanitary Horse Brush.

A sanitary horse brush recently placed on the market by the Milwaukee Dustless Brush Company, Milwaukee, Wis., as shown, top and bottom, in the accompanying illustrations. The feature of particular interest in this brush is found in the provision made to eliminate dust rising from the brushing of horses and the application of sanitary fluids for destroying disease germs and insects. In its general construction this brush is similar to other high grade horse brushes, but is distinguished therefrom



The Sanitary Horse Brush.

by a steel oil reservoir mounted on the back. This receptacle is filled with kerosene or coal oil, which is fed through a row of special feed tufts in sufficient quantities to moisten the dust. The reservoir being airtight, the flow of oil is regulated by simply tightening and loosening the screw cap seen in the top of the brush. The brush is said to be of durable construction throughout and the steel back is copper plated, giving it an attractive finish. It is made in one size only, No. 8, and each brush is packed in a neat cardboard box, in which it can be displayed to good advantage. The company offers to send a brush on 30 days' trial to responsible merchants.

Coal Chutes.

William U. Koons, Danville, Ill., is offering two patterns of coal chutes for buildings, which are shown in the accompanying illustrations. Fig. 1 represents a style

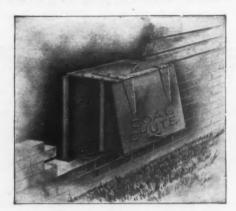


Fig. 1 .- Coal Chute to Rectangular Openings.

adapted to rectangular openings. It is constructed of 3-16 in. steel plate, and is provided with angle irons riveted to the sides, which not only serve to stiffen the case, but hold it firmly in the wall. The mouth of the chute is covered with a drop door strap hinged to the top of the body. This chute is 16 by 21 in. in size and made

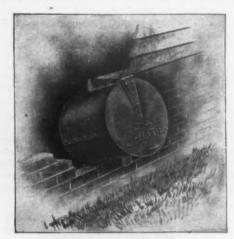


Fig. 2 .- Oircular Pattern Coal Chute.

only for 8 in, walls. Fig. 2 represents the circular pattern which is made of No. 12 steel, and is likewise held in the wall by angle irons riveted to the top and bottom of the cylinder. It is 22 in, in diameter and is also designed for 8 in, walls.

The Wonder Washer.

The Wonder Washer made by the Victor Mfg. Company, Leavenworth, Kan., is in some respects a departure from common practice in machines of this class. tub is rectangular, as shown in the accompanying illustration, and is separable from the four legged stool on which it is mounted. When not in use the stool may be turned upside down and the tub nested in it, in which form it can be conveniently stored under the table or hung on the wall. The stool or stand is made of yellow pine with steel or wooden braces. The tub, which measures 19 by 21 in. on top and holds 161/2 gal. of water, is made of No. 27 galvanized steel; has a neat molding around the top, which improves its appearance and also serves to prevent water and slop reaching the floor, all being drained back into the tub. Particular effectiveness is claimed for the agitator which is a distinctive feature of the machine and differs in shape and construction from those of other washers. Its frame is made of galvanized iron rod in one piece and includes the handle as well as the loops to which the canoe shaped agitator or suction cup is attached. Broad and substantial splash boards the hight of the tub are set inside at the center

of both front and back of the machine to assist in dividing and distributing the currents of water, thus increasing its agitation. This movement is further promoted by vertical wings set in each corner of the tub. Since the agitator works down among the clothes no space is required above the water, so that the tub may be worked full. By the combined action of suction, squeezing, rub-

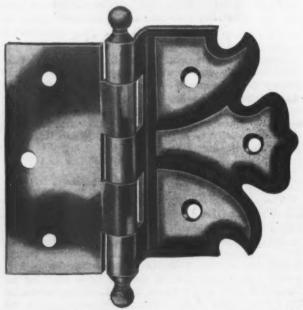


The Wonder Washer,

bing and swinging of clothes through the water, it is claimed that the cleansing process is accomplished in short time without damage to the fabric.

Crown and Crescent Surface Half Mortise Butt.

The McKinney Mfg. Company, Pittsburgh, Pa., has added to its line the Crown and Crescent surface half mortise Butt here illustrated. The goods are full size, made of heavy cold rolled steel and heavily plated in all standard finishes. They can be used on either right or



Crown and Crescent Surface Half Mortise Butt.

left hand doors without any adjusting. Each pair is packed in a separate box with screws, 100 pairs in a case. To hang a door the regular butt part should be mortised in the jamb. Then set the door, wedge to proper hight and insert screws in ornamental part. To remove a door it is only necessary to withdraw the screws from the ernamental part.

The Faultless Carpet Stretcher and Tacker.

The elimination of much of the tiresome and laborious effort connected with carpet laying is aimed at in the design of the carpet stretcher and tacker made by the J. W. Quilling Mfg. Company, Quincy, Ill., and illustrated herewith. Both the construction of the tool and

the wall or in a corner without danger of marring adjacent woodwork, Fig. 2, and, what is of special importance, the entire operation of stretching and tacking can be performed without stooping. The stretcher attachment B, Fig. 1, is furnished with front and rear plates, F and G, which engage the carpet, and it is affirmed that a pull strong enough to stretch the heaviest

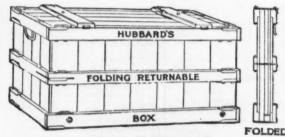


Fig. 3.—Enlarged View of Tack Hopper.

carpet, while carrying the operator's weight, can be exerted. The machine is described to use either 8, 10 or 12 oz. tacks.

Hubbard's Folding Delivery Box.

The Puffer-Hubbard Mfg. Company, Minneapolis, Minn., is putting on the market the folding packing box illustrated herewith. The feature of it is that after it has been used in forwarding merchandise it can be compactly folded as shown in the illustration and retruned at a very low rate to the shipper for successive use. The box is wire sewed, containing no nails. There are no loose parts and all metal is tinned. The hinges are made of pressed steel plate. The box locks and seals in a simple manner, so that it cannot be opened until the



Hubbard's Folding Delivery Box.

seal is broken. There is no expense or trouble in setting up the box, as all parts merely swing into their respective positions. When folded the lid and bottom are securely protected inside. Boxes are made in hights from 12 to 30 in., widths from 12 to 24 in. and lengths from 24 to 40 in. Owing to the method of folding, the hight must

always be made to equal or exceed width.





The Faultless Carpet Stretcher and Tacker.

Stretcher and Tacker in Operation.

the method of operation are clearly outlined in the illustrations, Fig. 1 showing it unfolded and in working position. A feature of interest is the device provided for automatically feeding the tacks, point down, under the driving rod, shown in Fig. 3. The tacks are held in a hopper, D, on the side of the wooden lever, from which they pass without regard to arrangement in the feed channel, where they are deposited in uniform position. One blow of the driving rod is usually sufficient to drive the tack home, but successive blows can be struck if required. It is claimed that tacks can be driven close to

PAINTS, OILS AND COLORS

Colors In Oil-

Animal, Fish and Vege-	Chalk, in bulk
table Oils- wgal.	Cobalt. Oxide 10 100 fb 1.45@ 2.60
	Whiting, Commercial # 100 fb .42@ .55 Gilders # 100 fb .55@ .66 Ex, Gilders # 100 fb .60@ .6
Linseed, State and Western, raw	Gilders
City, Boiled45 @46	Ex, Gilders \$7 100 fb .606g .60
City, Raw44 @45	n 44 0
Raw, Calcutta, in bbls70 @	Putty, Commercial \$ 100 m
Lard Prime Winter 66 667	In bladders\$1,70 @1.80
Lard Prime, Winter	In bbls, or tubs 1.20 @1,45
No. 1 47 (0030)	In 1 to 5 to cans 2.65 @2.95
Cotton-seed Crude f.o.b. mill @	In 12% to 50 fb cans 1.50 @1.90
Summer Yellow, prime47%@48	11 24 to to 2 calabilities 250
Summer White	Spirits Turpentine— weal.
Cotton-seed, Crude, f.o.b, mill	
Tallow Acidless	In Oil bbls
Menhaden, Brown, Strained38 @	In machine bbls
Light Strained	
Bleached Winter39 @	Glue— Ph
Ex. Bleached Winter40 @	Cabinet
Cocoanut, Ceylon	Cabinet12 @15
Cod. Domestic, Prime42 @44	Common Bone
Newfoundland44 (0)46	Fish liquid 50 cal bble ner cal-
Red Elaine	Fish, liquid, 50 gal. bbls., per gal- lon
Canonified at the State of the	Foot Stock, White12 @14
Olive Vellow B3 (@B)	Foot Stock, Brown 9 @11
	German Common Hide10 @12
Palm, Lagos	German Hide12 @18
	French
Mineral Oils-	Irish
Black 20 smarthy 25/240 cold 20 ral.	Low Grade10 @12
Black, 29 gravity, 25@30 cold \$\pi\$ gal. test	Medium White14 @17
Surprier	Gum Shellac- Ph
Cylinder, light filtered201/2@21	71-1-1 (11-1 00 000
Summer	Bleached, Commercial
	Button30 @40
	Diamond I 47 @48
883 sp. gravity11 @11%	Fine. Orange34 @35
Red13%@14	A. C Garnet
Miscellaneous-	Fine. Orange. 34 6:35 A. C. Garnet. 27 6:28 G. A. L. 18 6:19 Kala Button. 19 6:20
MITTONIA	Kala Button
Rarytes:	
White, Foreign	Octagon B
Amer., floated ton 18.00@20 00	T. N. 27 @32 V. S. O. 47 @48
50 ton 13 00@16 56	V. S. O

Colors in Oil—	SP ID
Black, Lampblack12	@14
Blue, Chinese36	@46
Blue, Prussian32	@36
Blue, Ultramarine	@14
Green, Chrome12	@16
Green, Paris	@24
Sienna, Raw12	@15
Sienna, Burnt12	@15
Umber, Raw11	@14
Umber. Burnt11	@14
White Lead, Zinc, &c.	_
trinto Ledd, Line, de	20 %
Lead, English white, in Oil109	(@10%
Lead, American White:	0 09/
Lots of 500 fb or over, in Oil Lots less than 500 fb, in Oil	(0 0%
Lots less than 500 m, in Oil	@ 7%
Lead, White, in oil, 25 lb tin	@ 74
pails Lead, White, in oil, 121/2 lb tin	
pails	@ 7%
Lead, White, in oil, 1 to 5 th	
pails Lead, White, in oil, 1 to 5 th assorted tins Lead, American. Terms: On 1 500 the and over 2% for cash i	@ 8%
Lead, American. Terms: On !	ots of
500 He and over 2% for cash 1	r paid
in 15 days from date of invoice	Se
Zino, Dry-	1
	30 m
American, dry 5	4@ 5%
Red Seal (French process) 6	M@ 7
Green Seal (French process). 7	4@ 74
German Red Seal (French	10000
process) 6	4a 6%
Green Seal 7	16@ 71/2
White Seal	14 (2) 878
French, Red Seal	14@10%
Dry Colors-	
	S D
Black, Carbon	14@10
Black Drop, American3	%@ 8
Black Drop, English 5	(May)
Black, Ivory	
. sumfile commercial consistences a	

Blue, Celestial
Ocher, American
Sienna Italian Burnt and Powdered 3 @ 9 Italian Raw Powdered 3 @ 7 American Raw 1/4@ 2 American Burnt and Pow'd 1/4@ 2
Tale. French
Vermilion, American Lead

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus $33\,\%$ @ $33\,\%$ & $10\,\%$ signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount,

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also The Iron Age Directory, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a directory of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants,

Hand-

Plow and Stove-

Adjusters, Blind-	Axes—	Polished, Brass50&10@60%	Plow and Stove-
Columbian and Domestic33%%	Single Bit, base weights: Per doz. First Quality\$\\$1.75@5.00	White Metal50&10@50&10&5%	Stove
North's	Second Quality \$4.25@4.50	Nickel Plated50&5% Swiss	Tire-
Window Stop-	Double Bit, base weights: First Quality\$7.00@7.50	Swiss	Norway Iron
Ives' Patent	Second Quality \$6.50@6.75	Miscellaneous— Farm Bellslb., 21/4@21/2¢	American Screw Co :
Ammunition-See Caps, Car-	Axle Grease— See Grease, Axle.	Church and School 60@60&5%	Norway Phila., list Oct. 16, '8489'/ Eagle Phila., list Oct. 16, '8482'/2'/ Bay State, list Dec. 28, '9980'/
tridges, Shells, &c.	Axles- Iron or Steel.	Belting- Leather-	Bay State, list Dec. 28, '9980% Franklin Moore Co.:
Anti-Rattlers-	Concord, Loose Collar. 44/265 ¢ Concord, Solid Collar. 44/465/4¢	Standard70&10@70&10&5%	Franklin More Co. Norway Phila. list Oct. 16, '8489', Eagle Phila., list Oct. 16, '8482', Eclipse, list Dec. 28, '99
Fernald Mfg. Co. Burton Anti- Rattlers, & doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50. Fernald Quick Shifter, & 00.02.	No. 1 Common, Loose 34@44¢	Cut Leather Lacing	Eclipse, list Dec. 28, '9980% Russell Burdsall & Ward Bolt &
\$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.	No. 1½ Com., New Style. 4½@5 ¢ No. 2 Solid Collar4½@5 ¢	Leather Lacing Sides, per sq. ft.	Nut Co.:
pairs	Half Patent:	Rubber-	Norway Phila., list Oct. '8480%
Anvils-American-	Nos. 7, 8, 11 and 1265@65&10% Nos. 13 to 14 65@65&10%	Competition (Low Grade),	Nut Co.: Nut Co.: Empire, list Dec. 28, '9980% Norway Phila, list Oct. '8480% Eagle Selection Co.: Selection Co.:
Eagle Anvils	Nos. 15 to 1870@70&10%	70&10@75&5% Standard	Phila. Eagle, list Oct. 16, 1881, 821/2
Trenton	Nos. 19 to 22	Best Grades	Upson Nut Co.: 72½%
Swedish Solid Steel Sisco, Superior,	Common and Concord, not	Bench Stops-	_ \ _
Peter Wright & Sons, P fb, 84 to 349 b, 11¢; 350 to 600 fb, 11½¢.	turnedlb., 5@6¢ Common and Concord, turned,	See Stops, Bench	Borers, Bung— Rorers Rung, Ring with Handle:
b, 11¢; 350 to 600 b, 11½¢.	lb., 6@7¢	Benders and Upsetters,	Borers Bung, Ring, with Handle: Inch 11/4 11/2 13/4 2 Per doz\$4.80 5.60 6.40 8.00
Anvil, Vice and Drill— Millers Falls Co., \$18.0015&10%	Half Patentlb., 91/2@10¢	Green River Tire Benders and Up-	Inch 21/4 21/9
Apple Parers - See Parers.	Bait- Fishing-	setters20%	Per doz
Apple, de.	A Rait	Bicycle Goods-	2, \$1.75; No. 3, \$2.50 each25%
Aprons, Blacksmiths'-	B Bait	John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes50%	Boxes, Mitre-
Livingston Nail Co10%	Balances— Sash—	Tubes60%	C. E. Jennings & Co25%
Com. Double Spur75&10@80%	Caldwell new list50&10%	Bits-	C. E. Jennings & Co25% Langdon, New Langdon and Lang- don Improved, 20&10%; Langdon
Jennings' Patn., Bright.65&10@70%	Pullman	Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.	Perfection
Black Lip or Blued65@65&5% Boring Mach. Augers70%	Light Spring Balances . 66@ 604 %	Blocks Tackle-	Seavey
Car Bits, 12-in. ticist 40&10% Ford's Auger and Car Bits 40&5% Ft. Washington Auger Co., Con-	Chatillon's: Balances 50@50&10%	Common Wooden 75@75&5%	Braces—
Ft. Washington Auger Co., Con-	Straight Balances	Boston Wood Snatch, 50%; Eclipse	Comman Ball, American\$1.50 Barber's50&10&10@60&10% Fray's Genuine Spofford's60%
Forstner Pat. Auger Bits25%	Large Dial	Star Wire Rope, 50%; Tarbox	Fray's Genuine Spofford's60% Fray's No. 61, 166, 296, 61450%
C. E. Jennings & Co.: No. 10 ext. lip. R. Jennings' list.	Barb Wire—See Wire, Barb.	Common Wooden 1502/1625 % B. & L. B. Co.; Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.	Fray's No. 61, 166, 206, 614
No. 30, R. Jennings' list	Steel Crowbars, 10 to 40 lb	Lane's Patent Automatic Lock and	Mayhew's Ratchet
No. 19 ext. 11p. R. Jennings 18t. No. 30, R. Jennings 11st. 25&7½/2 Russell Jennings 25&10&2½ L'Hommedieu Car Bits 15 Mayhew's Countersink Bits. 45/2	per 10., 21/4@21/3¢	Junior30% See also Machines, Hoisting.	P., S. & W. Co., Peck's Pat60&10%
Mayhew's Countersink Bits45% Pugh's Black	No. 10 Ideal, Nickel Plate. P gro. \$8.50	Boards, Stove-	Brackets-
Pugh's Black .30 % Pugh's Jennings' Pattern .35 % Suell's Auger Bits .60 % Snell's Bell Hangers' Bits .60 % Snell's Car Bits 12-in twist .60 %	Beam, Scale—	Paper and Wood Lined 55%	Wrought Steel70&10@75&10% Bradley Metal Clasp80&10@80&10&5%
Snell's Bell Hangers' Bits	Scale Reams	Embossed55%	Griffin's Pressed Steel75(375&17%
Snell's King Auger Bits50% Wright's Jennings' Bits50%	Chattillon's No. 1	Boards, Wash— See Washboards.	Griffin's Pressed Steel
Bit Stock Drills-	Beaters, Carpet-	Bobs, Plumb-	Bright Wire Goods—
See Drills, Twist.	Holt-Lyon Co.: No. 12 Wire Coppered 19 doz. \$0.80;	Keuffel & Esser Co331/4%	See Wire and Wire Goods.
Clark's Pattern, No. 1, 30 doz., \$26:	Tinned	Carriage, Machine, &c,-	Broilers-
Clark's Pattern, No. 1, \$\text{P} \ \ \doz., \$26; \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Tinned	Common Carriage (cut thread):	Kilbourne Mfg. Co
C. E. Jennings & Co., Steer's Pat. 25%	Postore Fag	% x 6 and smaller75&5@—% Larger and longer70@—%	Wire Goods Co75% Buckets, Galvanized —
Lavigne Pat., small size, \$18.00; large size, \$26.00	Dover Stamping & Mfg. Co.: Genuine Dover, per gro., No, 1, Tumbler Size, \$7.50; No. 2, Family Size, \$7.50; No. 3, Extra Family Size, \$24.00; No. 4, Hotel Size,	Phila. Eagle, \$3.00 list 80@—% Bolt Ends	M'fr's list, price per gross.
Swan's Gimlet Bits-	Tumbler Size, \$7.50; No. 2, Fam-	Machine (Cut Thread):	Quart 10 12 14) 3
Per gro.	ily Size, \$24.00; No. 4, Hotel Size, \$30.00,	% x 4 and smaller 75&10@-% Larger and longer 70@-%	Water, Reg 26.85 29.50 33.50 Water, Hvy 45.35 48.00 52.00
German Pattern, Nos. 1 to 10,		Door and Shutter-	Fire, Rd. Btm. 32.00 34.65 38.65 Well 37.35 41.35 45.35
\$4.75; 11 to 13, \$5.75	No. A, Jap'd, \$1.15; No. B, Jap'd,	Cast Iron Barrel, Japanned, Round Brass Knobs:	Bull Rings-See Rings, Bull.
Bonney Pat., per dox. \$5.50@6.00	Holt, per doz., No. 5, Jap'd, \$0.80; No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65; Lyon, Jap'd, per doz., No. 2,	Inch 3 4 5 6 8 Per doz \$0.30 .35 .45 .60 .80	Butts- Brass-
Ames		Cast Iron Spring Foot, Jap'd:	
Ship Augers and Bits-	Taplin Mfg. Co.: Improved Dover, per gro., No. 60, \$6,00; No. 75, \$6,50; No. 100, \$7.00; No. 102, Tin'd, \$8,50; No. 150, Hotel, \$15,00; No. 152, Hotel Tin'd, \$17,00; No. 202, Tumbler, \$8,50; No. 202, Tumbler Tin'd, \$9,50; No. 300, Mammoth, per doz., \$25,00.	Inch	Cast Brass, Tiebout's
Ship Augers. 40&106 Ford's 33½&5 C. E. Jennings & Co.: 6% L'Hommedieu's 6%	No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel	Cast Iron Chain, Flat, Japanned:	
C. E. Jennings & Co.:	Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd.	Inch	Fast Joint, Broad 40&10@50% Fast Joint, Narrow 40&10@50%
Watrous 334&74 Snell's 48%	\$9.50; No. 300, Mammoth, per	Cast Iron Flat Shutter, Jap'd, Brass Knobs:	Loose Pin
Awl Hafts—See Handles,	Bellows-	Inch 6 8 10	Mayer's Hinges70@70&5 Parliament Butts70@70&5
Mechanics' Tool.	Blacksmith, Standard List:	Per doz\$0.75 .95 1.25 Wrought Barrel Jap'd.80@80&10%	Wrought Steel-
Awis-	Split Leather	Barrel Bronzed60&10%	Bright.
Brad Auls:	Hand-	Spring 70&10@70&10&10\(\) Shutter 50&5@50&10&5\(\) Square Neck 75@75&10\(\)	Light Narrow, Light Reversible
Handledgro. \$2.75@3.00 Unhdled, Shlderedgro.63@66¢	Hand- Inch. 6 7 8 9 10 Doz. \$500 5.50 6.00 6.30 7.50 Molders-	Square Neck75@75&10%	Reversible and Broad. 70&5%
Unhandled, Patentgro.66@70¢ Peg Awls:	Inch. 10 12 15 16	Square	Loose Joint, Narrow, Light Inside Blind, &c70%
Unhandled, Patent gro. 31@34e	Inch. 10 12 14 16 5 Doz. \$7.50 9.00 12.00 15.00 8	Expansion-	Back Flaps, Table Chest. 65%
Unhdled, Shidered gro. 65@70¢ Scratch Awls:	Bells- Cow-	Expansion— F. H. Evans' Crescent	Light Narrow, Loose Pin.
Handled, Com gro. \$3.50@14.00 Handled, Socket . gro. \$11.50@12.00	Wrought Cour Bells		Japanned. Light Narrow, Loose Pin. 4065% Light Narrow, Ball Tip60%
Awl and Tool Sets—See	Texas Star50%	Style No. 13. Double	Broad
Sets, And and Tool.	Home, R. & E. Mfg. Co.'s55&10%	Lag Screw	Steeple Tipped70% Ball Tipped70%

une 18, 1908	THE IR	ON AGE	1990
Cages, Bird—	Chests, Tool-	Conductor Pipe,—	Slaw and Kraut-
Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300,	American Tool Chest Co.; Boys' Chests, with Tools	L. C. L. to Dealers: Gal. Steel. Charcoal.	Henry Disston & Sons: Slaw and Kraut Cutters35
1100, net list; 1200, 15%; 200, 300, 900	Gentlemen's Chests, with Tools. 25% Farmers', Carpenters, etc., Chests,	Northeastern . 70&10% 50&10&7½% Eastern 75% 50&10&7½%	Corn Graters. 30% J. M. Mast Mfg. Co.: 30% Slaw Cutters, 1 Knife. # doz. \$3.00 Combined Slaw Cutter and Corn
lendryx Enameled35%	with Tools20% Machinists' and Pipe Fitters'	Pittsburgh75&10&5% 60% Central75&10% 60%	Combined Slaw Cutter and Corn Grater
Calipers-See Compasses.	Tool Cabinets45%	Northwestern.	Tobacco-
Calks, Toe and Heel-	C. E. Jennings & Co.'s Machinists' Tool Chests	Western 70&121/2% 50&121/2%	All Iron, Cheapdoz, \$4.25@4.50 Enterprise
lunt, 1 prong, per lb., 44/444¢ harp, 1 prong, per lb., 44/4654¢	Chisels—	Tennessee 70&10% 50&121/4 50&121/4 50&121/4	National, ₩ doz., No. 1, \$21; No. 2, \$18
harp, 1 prong, per lb., 4%,05%; curke's, Blunt, 4@4%; Sharp, 4%,05%; cautier, Blunt, 4@4%; Sharp, 4%,04%; erkins', Blunt, \$\pi\$ b, 3.65; Sharp, 4.15;	SocketFramingandFirmer	Southwestern. 70% 5065% Terms, 60 days: 2% cash 10 days. Fic-	-
erkins', Blunt, \$\psi\$ b, 3.65\epsi; Sharp, 4.15\epsilon	Standard List80&10@—% Buck Bros30%	tory shipments generally delivered. See also Eave Troughs,	Diggers, Post Hole, &c-
Can Openers—	Socket Firmer No. 1025&7½%	Coolers, Water	Disston's: Rapid, \$\P\$ doz., \$24.0025%
See Openers, Can.	Standard List. Solid Firmer No. 10	L. & G. Mfg. Co.: Gal 2 3 4 6 8 Galvanized.ea \$1.85 \$2.00 \$2.25 \$2.90 \$3.90	Disston's: Rapid, \$\Phi\$ doz., \$24.00
Caps, Percussion—	Tanged-	Galvanized,ea.\$1.85 \$2.00 \$2.25 \$2.90 \$3.90	10 doz., \$7.00
ley's E. B	Tanged Firmers30&5@35%	Galvanized, Lined, side handles, Gal 2 3 4 6 8 Each\$1.95 \$2.15 \$2.40 \$3.30 \$4.15 White Enameled	Perfection Post Hole Diggers, \$8.7 Split Handle Post Hole Diggers.
Lper M 40@42¢ Eper M 48@50¢	Buck Bros	White Enameled	Split Handle Post Hole Diggers.
usketper M 62@63¢ Primers-	Cold-	Coppers' Tools-	Hercules Pattern, # doz., \$1.7 Kohler's, # doz., Universal, \$15.00; Little Giant, \$12.00; Hercules, \$10.00; Invincible, \$9.00; Kıval, \$8.50; Pioneer
erdan Primers, \$2 per M 20&5% rimer Shells and Bullets 15&10%	Cold Chisels, good quality. 13@ 15¢	See Tools, Coopers'. Coppers, Soldering—	\$10.00; Invincible, \$9.00; Rival,
imer Shells and Bullets15&10% other primers per M .\$1.52@1.60	Cold Chisels, fair quality.11@12¢ Cold Chisels, ordinary 9@10¢	Soldering Coppers, 3 lb, to pair	Never-Break Post Hole Diggers, P
Carpet Stretchers-	Chucks-	and heavier, 20¢; lighter than 3 lb. to pair22¢	Dividers-See Compasses.
See Stretchers, Carpet.	Almond Drill Chucks35%	Cord- Sash-	Drawing Knives-
Cartridges—	Beach Pat, each \$8,00	Braided, Drablb. 35¢ Braided, White, Com., Nos. 8	See Knives, Drawing.
lank Cartridges: 32 C. F., \$5.50	Blacksmiths'	Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or	Dressers Emery Wheel-
32 C. F., \$5.50	Almond Drill Chucks	over, 1 cent less per pound. Cable Laid Italian, lb., No. 18.37¢	Sterling Emery Wheel Dressers35° Sterling Wheel Dresser Cutters35°
32 cal, Rim, \$2.7510&5% B. Caps, Con. Ball, Swgd.\$190	Independent Lathe Chucks35%	Italian Ib A No. 18, 25¢; B, 22¢	Drills and Drill Stocks-
R Cans Round Ball \$1.33	Combination, Reversible Jaws35% Drill Chucks. New Model. 25%	Common India lb., 11@11½¢ Cotton Sash Cord, Tw'ted . 18@20¢	Blacksmith's Common Drilling
ntral Fire25 % urget and Sporting Rifle.15&5 % rimed Shells and Bullets.15&10%	Skinner Patent Unices:	Patent Russialb20¢ Cable Laid Russialb21¢	Machines
imed Shells and Bullets. 13&10%	Face Plate Jaws35%	India Hemp, Br'd'dlb21¢ India Hemp, Twistedlb.13@14¢ Patent India, Twistedlb17¢	Breast, P., S. & W
im Fire, Military15&5%	Standard Tool Co.:	Patent India, Twisted 1b 17¢	Ratchet Parker's Curtis25
Casters— d	Union Mfg. Co.; Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 2135%	27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢ Eddystone, Braided, Nos. 8 to 12.	Ratchet Weston's Style H Im
ale		Patent India, Ticisted 10. 17: Pearl Braided, cotton, No. 6, \$\pi\$ B. 27\(\pi\epsilon\); No. 7, 26\(\pi\epsilon\); No. 8 to 12, 26\(\epsilon\); Eddystone, Braided, Nos. 8 to 12, 26\(\epsilon\); 7, 26\(\pi\epsilon\); 6, 27\(\pi\epsilon\); 8 to 12, 26\(\epsilon\); 7, 26\(\pi\epsilon\); 6, 27\(\pi\epsilon\); 8 to 12, Harmony Cable Laid Italian, Nos. 7 to 10	proved
mme Ball Bearing	Geared Scroll, Nos. 33, 34 and 35, 25%		Ratchet, Celebrated
cel Gem	Independent Steel, No. 6425%	Wire Sash Cord	Whitney's Hand Drill, No. 1, \$10.00; Adjustable, No. 10, \$12.0033%
tie (Double wheel) low that worth	84 Seared Seroll, Nos, 33, 34 and 35, 25% Independent Iron, Nos, 18 and 318, 35% Independent Steel, No, 64, 25% Union Drill, Nos, 000, 00, 100, 101, 102, 103, 104, 35% Enion Czar Brill 25%	Samson, Nos. 8 to 12: Braided, 19 fb., Drab Cotton,	Twist Drills—
See Leaders, Cattle.	Universal, 11, 12, 16, 17, 13, 14, 15, 40% Universal No. 42, 35%	50¢; Linen, 65¢; White Cot-	Bit Stock 70@70&59
Chain, Proof Coil-	Union Czar Drill 236 Union Czar Drill 257 Universal, 11, 12, 16, 17, 13, 14, 15, 40% Universal No, 42, 55% Iron Face Plate Jaws, Nos. 28, 30, 48 and 50. 35% Steel Face Plate Jaws, Nos. 70 and 79, 30%	Sash Cord Attachments, per 100.\$2.00 Samson, Nos. 8 to 12: Braided, ₱ D. Drab Cotton, 55¢; Italian Hemp, 40¢@ 50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord50¢ Massachusetts, White ₱ h 40¢ Massachusetts, Drab ₱ h 40¢ Phoenix, White, Nos 8 to 1227¢ Silver Lake, per lb.; A. Drab, 45¢; A. White, 40¢; B. Drab, 40¢; B. White, 55¢; Italian Hemp, 40¢; Linen57½¢ See also Chain and Ribbon.	Taper and Straight Shank, 60&10@70%
merican Coil, Straight Link: 16	Steel Face Plate Jaws, Nos. 70 and 72 30%	Phoenix, White, Nos 8 to 1227¢	Drivers, Screw-
8.15 5.35 4.60 3.95 3.75 3.65 3.55	72	A. Drab. 45¢; A. White, 40¢;	Screw D'ver Bits, per doz. 45@50 Balsey's Screw Holder and Driver.
0.00	Lathe Chucks	Italian Hemp, 40¢; Linen57%¢	Balsey's Screw Holder and Driver, & doz., 2½-in., \$6; 4-in., \$7.50; 6-in., \$9
In cask lots, deduct 25¢. erman Coll60@60&5%	Little Giant Drill, Improved50% Oneida Drill		Buck Bros, Screw Driver Bits30 Champion50
erman Pattern Coil: 6-0 to 1	Whitaker Mfg. Co.:	Full Length90@—% Short Length90d20@—%	Fray's Hol. H'dle Sets. No. 3, \$12, 500
2 and 360&10&10@60&10&10&5% 4, 5 and 650&10@50&10&5	National Drill25%	Hendryx Standard Wire Picture Cord, old list, 85&10%	Ford's Brace Screw Drivers40&10 Gay's Double Action Ratchet35
Halter-	Adjustable Hammers	Turner & Stanton Co, Wire Picture Cord85&10%	Maybow's Plack Handle
alter Chains60@60&5% erman Pattern Halter Chains,	Adjustable Hammers	Gradies-	Mayhew's Monarch 40 Millers Falls, Nos. 20 and 21 25&10 Millers Falls, Nos. 11, 12, 41, 42 . 15&10 Smith & Hemenway Co. Nare- turn, 66%; Elmora,
list July 24, '9760&10&5% overt Mfg. Co.:	Co	Crayons→	Smith & Hemenway Co. Never-
Halter35&5%	Lineman's Swedish Neverturn65% Wood Workers' Hammers40&10% Saw Clamps, see Vises, Saw Filers'.	White Round Crayons, Cases, 100 gro., \$6.50@\$7.50 at factory, but	Swan's:
See Halters and Ties.		lower prices made by Jobbers.	Nos. 7565 to 7569, 67%; No. 7540.
Trace, Wagon, &c races, Western Standard: 100 pr.	Cleaners, Drain, Iwan's Champion, Adjustable50%	Zelnicker's Lumber: # gro. White and Purple, Indelible\$7.50	40&10
4-6-3, Straight, with ring \$28.00 2-6-2, Straight, with ring \$29.00	Iwan's Champion, Stationary40%	Terra Cotta, \$6.50; Black\$4.50	ave Trough, Galvanized-
2-8-2, Straight, with ring \$32.00	Star Socket, All Steel. @ doz. \$4.05 net	round, all colors, \$12.00; Indel-	Charcoal
2-10-2, Str'ght, with ring.\$37.00 NOTEAdd 2c per pair for Hooks	Star Socket, All Steel. \$\psi\$ doz. \$4.05 net Star Shank. All Steel. \$\psi\$ doz. \$3.24 net W. & C. Shank, All Steel. \$\psi\$ doz., 7\psi\$ in., \$3.00; 8 in., \$3.25.	Zelnicker's Lumber: White and Purple, Indelible\$7.50 Blue, Red, Green, Yellow and Terra Cotta, 86.50; Black\$4.50 Giant Lumber, 5¼ in. x 15-16 in. round, all colors, \$12.00; Indelibles, \$14.00; Blacks\$10 90 Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, \$2.50; 5 in. x ¼ in. Source \$175; 5 & & x 3.16	TerritoryGal. Steel. Iron. Northeastern.75&10&5% 60&20%
NOTE.—Add 2c per pair for Hooks sist Traces: add per pair for Nos. 2 d 3, 2c: No. 1, 3c; No. 0, 4c to price of		% in. Square, \$1.75; 5 x ½ x 3-16, \$2.50: 5 x 1½ x 3-16	Eastern 80&21/2% 60&20 ? Partsburgh 80&20% 65&10 ?
aight Link. 1stern Standard Traces, Wag-	Cleavers, Butchers'— Foster Bros	% in. Square, \$1.75; 5 x ½ x 3-16, \$2.50; 5 x 1¼ x 3-16. \$3.00 Suremark, Black, \$2.25; Blue, Red and Yellow. \$2.50	Northwestern . 80&10&10&2½% 65&10% Northwestern . 80&10&10% 65&10%
on Chain, &c60&10@60&10&5%	Fayette R. Plumb	Crooks, Shepperds'-	Western80&10% 60&10&5% Tennessee80&5% 60&10&5%
Miscellaneous- ck Chain, list July 10, '93:	Clippers, Horse and	Fort Madison, per doz., Heavy, \$5.50: Light\$5.00	Southern 80% 60&10&59
ron	Sheep— Chicago Flexible Shaft Co.;	Crow Bars-See Bars, Crow.	Terms2% for cash. Factory shipmee
tetu and Plumbers (1963), 75%	1902 Chicago Horse, each. \$10.75	Victor Garden50%	generally delivered. Note.—Lower prices are made in som
ul. Pump Chain lb., 4½65% idgeport Chain Co.: Coil.35&2½640%	Lightning Belt Horse, each. \$5.00 Chicago Belt Horse, each. \$20.00 Stewart's Enclosed Gear	Cutlery, Table-	sections. See also Conductor Pipe and Elbows
riumph Dog	Stewart's Enclosed Gear Horse each	No. 12 M'd'm Knives, 1847. 2 doz. \$3.50	Elbows and Shoes-
reast. Halter. Heel, Rein, Stal-		No. 12 M'd m Knives, 1847. doz. \$3.50 Star, Eagle, Rogers & Hamilton and Anchor. doc. \$3.00 Wm. Rogers & Son. doc. \$2.50	Factory shipments, all territories
neida Community:	Stewart Enclosed Gear Shearing Machine, No. 8, each. \$9.75	Cutters— Glass—	Galv. Steel and Galv. C. I. Standard Gauge85@85&10?
American Halter, Dog and Kennel	Clips, Axle—	H. H. Mayhew Co40%	No. 26
Chains	Regular Styles, list July 1. '05. 80&80&10%	Red Devil	No. 22
log Chain	Cloth and Netting, wire	Woodward	Elbows, Stove Pip3-
Universal DblJointed Chain50% Chain and Ribbon, Sash—	—See Wire, &c.	American	Edwards, Standard Blue40&10&10 Edwards, Royal Blue40&10&10
neida Community:	Cocks, Brass— Hardware list:	Each \$5 \$7 \$10 \$12 \$25 \$50 \$60 Enterprise:	Reeves, Dover, one piece40&10? Emery, Turkish—
Ilman:	Plain Bibbs, Globe, Kerosene.	Enterprise: Nos 5 10 12 22 32 Each \$2 \$3 \$2.75 \$4.50 \$6 25@25&71\(\frac{1}{2}\)\text{No. 202. \$1.50}. No. 202. \$1.50 40&71\(\frac{1}{2}\)\text{P. S. & W. Co.;}	4 to 54 to
Bronze Chain, 60%; Steel Chain, Coppered	Racking, Liquor, Bottling.	P. S. & W. Co.;	Kegs 1b. 5 c 51/4c 31/4
Sash Chain Attachments, per set. 3c Alumino Dash Ribbon, per 100 ft	Compression Bibbs70%	Dixon's	1/2 Kegslb. 51/4¢ 53/4¢ 33/4 1/4 Kegslb. 51/2¢ 6 ¢ 4
Sash Ribbon Attachments, per set8¢	See Mills. Coffee.	Ideal \$14.00 \$17.00 \$19.00 \$30.00	10-lb. cans.
Chalk— (From Jobbers.) arpenters' Bluegro., 50@55¢	Collars, Dog-	Hales	10 in case6½ 7 ¢ 6 10-1b. cans, less
arpenters' Redgro., 45@50¢ arpenters' Whitegro., 40@45¢	Nickel Chain, Walter B. Stevens & Son's list	Nos. 300 310 312 320 322 \$35,00 \$48.00 \$44.00 \$72.00 \$68.00 New Triumph No. 605, \$9 doz. \$24.00	than 10 10 ¢ 10 ¢ 8 ¢ Less quantitu. 10 ¢ 10 ¢ 8 ¢
penters watte yru., 400145¢	Son's list	Puggwin Food No. 1 524 69. 10%	NOTE.—In lots 1 to 3 tons a discount of
Checks, Door-		ARTHURINE ALTERNATION AND ALTERNATION OF THE PARTY AND THE	
Checks, Door 45% rdsley's 45% sllman, per gro. \$54,00 sswin 3314%	Compasses, Dividers, &c.	\$27.00	Extractors, Lemon Juice-

2000		THE IR	June 18, 1908	
Fastener Zimmerman's Walling's Upson's Pate Cord Ives and Tite Cork Lined Metallic Ke Red Cedar Petroleum B. & L. B. Set Lock John Sommer	## 150410@60 ## 20	Grease, Axle— Common Grade gro. \$6.00@\$6.50 Dixon's Everlasting. 10-1b. pails, ea. 85 e; in boxes, \$4 dow., 1 b. \$1.20; 2 b \$2.00 Helmet Hard Oil 25% Griddles, Soapstone— Pike Mfg. Co 334@334&10% Grindors— Royal Mfg. Co.: Alundum Grinding Machines, each, Nos. 20, \$1.75; 1A, \$2.50; 10, \$5.00 30% Alundum Sickle Grinders, each, Nos. 20, \$5.00; 20A, \$6.00; 20A Combined, \$6.50 30% Alundum Disc Grinders, each, \$2.50 Sy.50 20A, \$6.00; 20A Combined, \$6.50 30% Alundum Disc Grinders, each, \$2.50 30% Grindstones— Pike Mfg. Co.: Improved Family Grindstones, \$0.00; 20A, \$0.00; 20A	Allith Mfg. Co.: Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door	Stanley's Steel Gravity Blind Hinges. No. 1617%. \$\forall doz. sets. without serews, \$1.25. With screws, \$1.25. Wigher like Hardware Co.: O. S., Lulk & Fetc
Fodder See Co Forks— NOTE.— selling from 1, 1904, but using list selling at n lowa Dig-Ezy Victor, Hay Victor, Hay Victor, Hay Columbia, M Co	Squeezers mpressors mpressors mressors manufacturers are the list of September manufacturers are the list of September manufacturers manuf	Heavy Hammers and Sledges— Under 3 lb., per lb., 50¢80&10% 3 to 5 lb., per lb., 40¢80&10% Over 5 lb., per lb., 40¢80&10% Over 5 lb., per lb., 30¢80&10% Handles— Agricultural Tool Handles Axe, Pick. &c60&10@60&10&5% Hoe, Rake, &c40% Fork, 8hovel. 8pade, &c.: Long Handles40% B Handles40% Cross-Cut Saw Handles—Atkins'40% Cross-Cut Saw Handles—Atkins'40% Champion 50% Mechanics' Tool Handles—Auger, assortedgro. \$3.00@33.50 Brad Avel	Royal, Adjustable Track No. 122 Royal Roya	Garden City Engine House
Waterproof Waterproof Waterproof Gates, N Stebbins' Pe Gauges Marking, M Chapin-Stephe Marking, M Disston's Ma Wire, Brown Wire, Brown Wire, Morse Wire, P. S. & Gimlets Nail, Metal Spike, Meta Nail, Wood Spike, Wood Glass, A See Tr Glasses Chapin-Stephe Glue, Li Bottles or	8gl. Taped. 3.65 Dbl. Taped. 4.40 Tpl. Taped. 5.15 Classes and Oil	Chapin-Stephers Co.: Carving Tool	Clark. No. 5, 81.75; No. 5B, 82.00; No. 3, 82.25; No. 3D, 82.75; No. 7D, 83.00; No. 3E, 32.87; No. 1, 83.50; No. 3E,	Cor. Heavy Strap 6045% 5 Cor. Ex. Heavy T 5040% 5 Screw Hook

June 18, 1908	THE IRO
Handled- NOTE - Manufacturers are selling	Kettles-
NOTE — Manufacturers are selling from the list of September 1, 1804, but many jobbers are still using tist of Au- gust 1, 1899, or selling at net prices. Cronk's Weeding, No. 1, \$2.00; No. 2,\$2.50 for Double Bit.	Brass, Spun, Plain20@25% Enameled and Cast Iron—See Ware, Hollow. Knives—
Cronk's Weeding, No. 1,82.00; No. 2,82.50 Star Double Bit	Butcher, Kitchen, &c.— Foster Bros.' Butcher, &c30% Wilkinson Shear & Cutlery Co60%
Junior Size	Corn— Columbian Cutlery Co., Wilcut Brand Knives and Hooks
Ft. Madison Dixie Tobacco Hoe	Columbian Cutlery Co., Wilcut Brand Knives and Hooks60% Withington Acme, \$\forall dos., \$2.65; Deut, \$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Xankee No. 1, \$1.56; Yankee No. 2, \$1.15.
W & C. L'tning Shuffle Hoe. \$3.40 B. B. 6½ in \$3.50 B. B. 6½ in \$3.50 Acme Wedding \$3.50 W. & C. L'tning Shuffle Hoe. \$4.35 W. & C. L'tni	Standard List80&10@-% C. E. Jennings & Co., Nos. 45, 46.
Hoisting Apparatus— See Machines, Hoisting. Holders— Bit—	Jennings & Griffin, Nos. 41, 42, 66%&7½% Swan's
Angular, \$\mathcal{P}\$ doz. \$24.0045&10% Door- Rardslev's Iron 40%: Brass and	Hay and Straw- Serrated Edge, per doz. \$5.50@5.75 Iwan's Sickle Edge
Empire	### Miscellaneous— ### Farriers'
Superior	Knobs— Base, 2½-inch, Birch or Maple, Rubber Tipgro.\$1.25@1.40 Carriage, Jap., all sizes,
Fruit Jar— Triumph Fruit Jar Holder, \$\psi\$ gross,	gro. 40@45¢ Door, Mineraldoz.65@70¢ Door, Por. Jap'ddoz.70@75¢ Door, Por. Nickeldoz.82.50@2.15 Bardsiey's Wood Door, Shutters, &c.15%
Trace and Rein— Fernald Double Trace Holder, \$\psi\$ doz. pairs Dash Rein Holder, \$\psi\$ doz. pairs.\$1.25	Bardsley's Wood Door, Shutters, &c.15%
Hones—Razor— Pike Mfg. Co., Belgian and Swaty, 50%; German	See Belting, Leather Ladders, Store, &c.— Allith Mfg. Co., Reliable
Hooks-Cast Iron-	Lane's Store
Bird Cage, Reading 10% Clothes Line, Reading List 40% Coat and Hat, Reading 45&20 Coat and Hat, Wrightsville .00&5 Harness, Reading List .10% Wire—	Trolley, No. 109
Belt	Lanterns-Tubular-
Parker Wire Goods Co., King. 70&10% Wire Goods Co., King. 70&10% Acme. 60&10%; Chief. 70%; Crown. 75%; Czar. 65%; V Brace, 75%; Czar Harness, 50&10%.	Regular, No. 0 doz. \$4.35@4.50 8ide Lift, No. 0 doz. \$4.60@4.75 Hinge Globe, No. 0 . doz. \$4.60@4.75 Other Styles
	3 inch \$1,25@4.50 Latches— Thumb— Roggin's Latches, with screw,
Box, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$2.50. Cotton doz \$1.05@\$1.25 Wrought Staples, Hooks, &c.—See Wrought Goods. Miscellaneous—	doz.35@40¢ Door— Allith Mfg. Co., Reliable and Alle-
Hooks, Bench, see Stops, Bench. Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65 Grass, best, all sizes, per doz.\$3.09 Grass common grades, all sizes.	gator, 59%; Rehable Cold Storage, 50%; Cronk & Carrier Mfg, Co., No. 101, Richards' Bull Dog, Heavy, No. 125. Richards' Trump, No. 127. \$\int_{1.50}^{\text{2}}
Grass, common grades, all sizes, per doz. \$1.50 Whistletrees	Leaders, Cattle— Smalldoz.50¢; large, 60¢
Brass	Cotton 45%; Hemp, 45%; Jute, 35%; Sisal, 20%. Leathers, Pump— See Pumps—
Hooks 40% Ft, Madison Cut-Easy Corn Hooks, Ft, Madison Cut-Easy Corn Hooks, W doz. \$3.25 net Shoulder & Stanton Co. Cup and Shoulder	Lifters, Transom— R. & E
Corn Hooks—See Bench Stops. Corn Hooks—See Knives, Corn. Horss Nails— See Nails, Horse.	Wire Clothes, Nos. 18 19 20 100 feet \$2.50 2.25 2.00 75 feet \$2.10 1.80 1.65 Samson Cordage Works:
Horseshoes— See Shoes, Horses.	Wire Clothes, Nos. 18 19 20 100 feet\$2.50 2.25 2.00 75 feet\$2.10 1.30 1.65 Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3.49% Solid Braided Masons'
Garden Hose, K-inch: Competition	\$6,00; No. 1, \$6,50; No. 2, \$7,00; No. 3, \$7,50. Masons' Lines, Shade Cord, &c. White Cotton, No. 3½, \$1,50; No. 4, \$2,00; No. 4½, \$2,50; Colors, No. 3½, \$1,75; No. 4, \$2,25; No. 4½, \$2,75; Linen, No. 3½, \$2,30; No. 4, \$3,50; No. 4½, \$4,50. Tent and Awning Lines: No. 5, White Cotton, \$7,50; Drab Cotton, \$8,50
Cotton Garden, ¾-in., coupled: Low Grade	Linen, No. 3½, \$2.20; No. 4, \$3.50; No. 4½, \$4.50
From 4 to 10	\$8.50 29% Clothes Lines, White Cotton: 50 ft., \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25
Mrs. Potts', cents per set: Nos. 50 55 60 65 Jap'd Tops83 80 93 91 Tin'd Tops88 85 98 95 New England Pressing1b.3\(4\)	Solid Braided Chalk, Masons' and Awning Lines
New England Pressing. 1b.3%@4¢ Bar and Corner— Richards Mfg. Co., Bar, 60&10%; Corner	Locks— Cabinet— Cabinet Locks
Pinking - doz.60¢	NOTE.—Net Prices are very often mude on these goods. 40% Reading Hardware Co
See Coppers. Jacks, Wagons— Covert Mg. Co.:	Padlocks— B. & E. Mfg. Co. Wrought Steel and Brass
Auto Screw	Ives' Patent: Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilat- ing, 40&20%; Robirson Pat. Venti- lating Sash Lock, 334%; Pullman Patent Ventilating Lock. 25%
Richards Mfg. Co., Ladder Jacks. 50%	Pullman Patent Ventilating Lock. 25% Reading Sash Locks

THE IR	ON
K	N
Kettles— Brass, Spun, Plain20@25% Enameled and Cast Iron—See Ware,	Con
Knives—	Con
Butcher, Kitchen, &c.— Foster Bros.' Butcher, &c30% Wilkinson Shear & Cutlery Co60%	Swa Jeni Mill Sne
Corn- Columbian Cutlery Co., Wilcut	Reis
Corn—Columbian Cutlery Co., Wilcut Brand Knives and Hooks	Will
Drawing-	Mod
Drawing— Standard List80&10@—% C. E. Jennings & Co., Nos. 45, 46, 25&74% Jennings & Griffin, Nos. 41, 42,	Mod Bi Mod H
Jennings & Griffin, Nos. 25&74% 41, 42, 66% 2472 Swan's 66% 6707 Watrous 16% L. & I. J. White 20&5@25%	Cha
Hay and Straw— Serrated Edge, per doz. \$5.50@5.75 Iwan's Sickle Edge	Bos Bos Ch
Miscellaneous— Farriers'	St St Ci U
Knobs— Base, 2½-inch, Birch or Maple, Rubber Tipgro.\$1.25@1.40 Carriage, Jap., all sizes,	Hic
Carriage, Jap., all sizes, gro. 40@45¢	Lig Tin
970.40@45¢ Door, Mineral	Swe
Lacing, Leather	Acr
See Belting, Leather Ladders, Store, &c.— Allith Mfg. Co., Reliable	1
THE COLUMN TO THE PROPERTY OF	1
Myers Noiseless Store Ladders 00% Richards Mfg, Co.: 1	Ent
Ladles, Melting— L. & G. Mfg. Co. (low list)20%	Par Par Swi
Ladies, Melting— L. & G. Mfg. Co. (low list)20% P. S. & W	Div
Regular, No. 0doz.\$4.35@4.50 Side Lift, No. 0doz.\$1.60@4.75	Lip
Regular, No. 0 doz. \$4.35@4.50 Side Lift, No. 0 doz. \$4.60@4.75 Hinge Globe, No. 0 . doz. \$4.60@4.75 Other Styles 40@40&10%	Che
3 inch	Che 20
Latches— Thumb— Roggin's Latches, with screw, doz.35@40¢	Bet
doz. 35@40¢ Door— Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50% Croak & Carrier Mfg. Co., No. 19, 200 Richards' Bull Dog, Heavy, 200	Con Gre Gre
Richards' Trump, No. 127\$1,50	Pen Pen Pen
Leaders, Cattle— Smalldoz.50¢; large, 60¢ Covert Mfg, Co.: Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.	Pen Pen Gra
Leathers, Pump-	St
See Pumps— Lifters, Transom—	Phi Si
R. & E	81 81 D
Lines— Wire Clothes, Nos. 18 19 20 100 feet\$2.50 2.25 2.00 75 feet\$2.10 1.80 1.65 Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3.49% Solid Braided Masons	H Pe 36
Solid Braided Chalk, Nos. 0 to 349% Solid Braided Masons'	I,
\$6,00; No. 1, \$6,50; No. 2, \$7,00; No. 3, \$7,50	N
White Cotton, No. 31/2, \$1.50; No. 4, \$2.00; No. 41/2, \$2.50; Colors, No. 31/2,	Cui
Silver Lake Braided Chalk, No. 0. \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50. Masons' Lines, Shade Cord, &c. White Cotton, No. 3½, \$1.50; No. 4, \$2.00; No. 4, \$2.50; Colors, No. 3½, \$1.50; No. 4, \$2.75; Linen, No. 3½, \$2.50; No. 4½, \$2.75; Linen, No. 3½, \$2.50; No. 4½, \$2.75; No. 4½, \$4.50; No. 4½, \$3.50; No. 4½, \$4.50; No. 5, White Cotton, \$7.50; Drab Cotton,	Hu
\$8.50	And
\$8.50 20% Clothes Lines, White Cotton: 50 ft., \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25 20% Turner & Stanton Co.; Solid Braided Chalk, Masons' and Awning Lines	Livi Wes
Solid Braided Chalk, Masons' and Awning Lines. 40', Clothes Lines, White Cotton29', Shade Cord, Cotton or Linen20',	Job
Shade Cord, Cotton or Linen20% Locks— Cabinet—	Bro
Cabinet Locks	Por
NOTE.—Net Prices are very often mude on these goods.	Bra Pla
R. & E. Mfg. Co. 10% Padlocks— R. & E. Mfg. Co. Wrought Steel and	
Dram	Cole
Yes' Patent: Bronze and Brass, 55&5%; Crescent, 60%; Iron. 60%; Robinson Pat. Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33%.	H Se
lating Sash Lock. 331/4%.	1101

N AGE	2001
M	0.
Vachines—Boring—	Oakum— Bestlb.6%¢
Com Angly without Augers	Best
*2 25(a) 2 50	Plumbers' Spun Oakum2%@3 e
Swan's Improved 40&10% Jennings Nos. 1 and 4 25&712 Willers Falls 5.75 Snell's Upright, \$2.65 Angular, \$2.90	Oil Tanks-See Tanks, Oil.
	Steel, Copper Plated
Corking— Reisinger Invincible Hand Power P doz. \$48.00	Proces and Connect Follow
¥ doz. \$48.00	Zine
Williams' Fence Machineseach, \$5.50	Malleable, Hammers Improved, Nos.
Hoisting— Moore's Anti-Friction Chain Hoist,30%	Zinc
Moore's Hand Hoist, with Lock Brake 20% Moore's Cyclone High Speed Chain Hoist	Spring Bottom Cans70@70&10% Railroad Oilers, &c60@60&10%
Hoist	Railroad Oilers, &c
Ice Cutting—	Railroad Oilers, &c60(a60&10%) Openers— Can— Per doz.
Washing	Sprague, Iron Handle 39@35e Sprague, Wood Handle 35@49e Sardine Scissors \$1.75@3.09 Yankee Can and Bottle Opener, \$\forall doz, net. \$9.75; Little Gem, \$\psi\$ doz, net \$0.65
Boss Washing Machine Co.: Per doz. Boss No. 1	Sardine Scissors \$1.75@3.00 Vankee Can and Bottle Opener
Boss No. 1	₩ doz., net. \$0.75; Little Gem.
Standard Perfection	Egg-
Uneeda American, Round\$33.60	Hartigan Nickel Plate, \$\psi\$ doz., \$2.00; Silver Plate, \$4.00.
Mallets—	Packing—
Hickory	Asbestos Packing, Wick and
	Rope, any quantity20¢
Mangers, Stable—	(Fair quality goods.)
Swett Iron Works	Sheet, C. O. S
Acme Flexible Steel	(Fair quality goods.) Sheet, C. I
Mattocks—	Jenkins' '96, P b, 80¢
See Picks and Mattocks.	Miscellaneous— American Packinglb. 7@10 ¢
Milk Cans—See Cans, Milk.	Cotton Packing
Mills, Coffee, &c.— Enterprise Mfg. Co20@25%	Italian Packing 1b. 9@12/4¢ Jute
Enterprise Mfg. Co	Pails, Water, Well, &c
Parker's Box and Side50&10% Swift, Lane Bros. Co30%	See Buckets.
Motors, Water-	Pans— Dripping— Standard List
Divine's Red Devil30% Lippincott's	
Mowers, Lawn-	Common Lipped: Nos
NOTE.—Net prices are generally quoted Cheapest, 10-in., \$2.00; advance	1 61 110 90.10 0.00 0.00 1.10 1.00
10¢ for each size. Cheap, 10-in., \$2.25; advance 15@	Refrigerator, Galva.—
Cheap, 10-in., \$2.25; advance 15@ 20¢ for each size. Better Grade, 10-in., \$3.00; ad-	Per doz\$1.75 2.25 2.80 8.15
vance 25¢ for each size. 12 14 16 18 in.	Ashestos: 1b.
High Grade \$4.50 4.75 5.00 5.25	Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft., 21/463
Continental 00% Great American 70% Great American Ball B'r'g, new list.70%	Koll Board or Building Felt
Quaker City	3-32 and 1/8 in., 45 to 60 lb., per 160 sq. ft
Great American Ball Brig, new list 70 Great American Ball Brig, new list 70 Quaker City. 70 Pennsylvania Golf. 8all Bearing, 50&10&50 Pennsylvania Golf. 50 50 50 50 50 50 50 50 50 50 50 50 50	Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in
Pennsylvania Horse331/4&5%	Rosin Sized Sheathing: 500 sq. ft.
Pennsylvania Pony. 4080% Granite State: Style A, Low Wheel. 70% Style C, High Wheel, spel, hist, 704:10%	Light weight, 25 lbs. to roll, 48@58¢
Style B. Low Wheel	Medium weight, 30 lbs. to roll.
8tyle D. High Wheel, spcl, list70%	Heavy weight, so lbs. to roll.
Style D, High Wheel, spcl, list70% Philadelphia: Styles M., S., C., K., T70&10&5%	Plack Water Proof Sheathing
Styles M., S., C., K., T 70&10&5% Styles A., all Steel	500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25. Deafening Felt, 9, 6 and 4½ sq.
	Deafening Felt, 9, 6 and 11/2 89.
Horse	ft. to lb., ton
I, X, L, Horse50%	Tarred Paper-
Nails-	I plu (roll MO) sq. Tt.), ton.
Wire Nails and Brads, Miscel-	\$34.00@\$38.00 2 ply, roll 108 sq. ft
laneous	Slater's Felt (roll 500 sq. ft.).80¢
Hungarian, Finishing, Upholster- ers', &c. See Tacks.	Sand Paper and Cloth— Flint and Emery
Horee-	Parers—Apple—
Nos. 6 7 8 9010 Anchor 22 21 20 19 18 .49&5% Coleman 13 12 12 11 11 net New Haven. 23 21 20 19 18 .49&5% Livingston 19 18 19 8.40&5% Western 20 19 18 49&5 Jobbers' Special Brands, ner D. 26 106	Goodell Co.:
New Haven. 23 21 20 19 1840&5% Livingston 19 18 17 16 1610%	Family Bay State 400.2 \$15.00
Western P b 846	Turn Table '98
per ro. sarroy	Bonanza Improvedeach \$7.50 Dandyeach \$10.00
Picture- 1½ 2 2½ 3 in.	Eureka Improvedeach \$20.00 New Centuryeach \$20.00
1½ 2 2½ 3 in. Brass Hd, gro 55 .60 .79 Por. Head, gro 1.10 1.10 1.10	Livingston Nail Co !
Upholsters-	Paisy # doz. 34.00 Little Star # doz. 35.00 Rocking Table # doz. 36.00 Reading Hardware Co.:
Brass	Reading Hardware Co.:
Nippers— See Pliers and Nippers.	Advance \$\psi\$ doz. \$4.00 Baldwin \$\psi\$ doz. \$4.00 Reading 72 \$\psi\$ doz. \$3.25 Reading 78 \$\psi\$ doz. \$6.25
Nuts Blank or Tapped.	Reading 78
Cold Punched: Off list.	Potato— Saratoga
Hexagon	Picks and Mattocks—
Cold Punched: Off list. Square 5.20¢ Hexagon 5.80¢ Square, C., T. & R. 5.60¢ Ilezagon, C., T. & R. 6.30¢ Met Persey 6.30¢	(List Jan 1908)
Not Pressed: Square	Last
Hexagon	P doz., No. 2, \$2.69 No. 3, \$6.40.

Pinking Irons-

See Irons, Pinking.

Pins, Escutcheon-

Pipe, Cast Iron Soil-

Standard, 2-6 in...... 60&5A-% Extra Heavy, 2-6 in.... 70&5A-% Fittings, Standard and Heavy, 70&10@75%

Pipe, Merchant-

	Co	msu	mers,	Carl	oads,
		Steel.		Iron.	
	1	3lk.	Galv.	Blk.	Galv.
	1	2	%	%	%
1/2 and 1/4	in	64	48	62	
% in	!	66	52	64	50
1/2 in		68	56	66	54
% to 6 in .		72	62	70	60
7 to 12 in.	!	69	54	67	52

60 52

Pipe, Vitrified Sewer

Carload lots.								
Standard Pipe and Fittings,	3							
to 21 in., f.o.b. factory:								
First-class								
Second-class	. 90%							

Pipe, Stove-

) joints.
Edwards' Nested:	C. L.	L, C. L.
5 in., Standard Blue	.\$6.25	\$7.25
6 in., Standard Blue	. 6.75	7.75
7 in., Standard Blue	. 7.75	8.75
5 in., Royal Blue	. 7.00	8.00
6 in., Royal Blue	. 7.50	8.50
7 in., Royal Blue	. 8.50	9.50
Wheeling Corrugating Co	's Nes	ted:
5 in., Uniform Color.	.\$6.15	\$7.15
6 in., Uniform Color.	. 6,65	7,65
7 in., Uniform Color.	. 7.65	8,65

Planes and Plane Irons Wood Planes-

Bench, first qual 30@30&10%
Bench, second qual 40@40&10%
Molding
Chapin-Stephens Co.:
Bench, First Quality30%
Bench, Second Quality40%
Molding and Miscellaneous25%
Toy and German30%
Union

Iron Planes -

Chaplin's	Iron	Planes	50&10%
Union			60%

Plane Irons-

Wood										
Dec.										
Buck										
Chapin	-Stel	hen	8 (Co.		 ***	 **			25 /
Union L. & 1	. J.	Whi	ite.	***	**	 	 20	8	(a)	50 % 25 %

Planters, Corn, Hand-

Kohler's	Eclipse	P	doz.	\$8,0
----------	---------	---	------	-------

Plates-

Felloe	*							. ,		lb.	4@44¢
--------	---	--	--	--	--	--	--	-----	--	-----	-------

Pliers and Nippers

But	ton	Pli	ers		. 75	£5@	75d	10d5	%
								, \$1.2	9.5
(0.8	1.30 ;	6	in.,	81.	15	81.5	0.	*	
Gas	Pip		7	80	8		10	18-61	

Acme Nippers50&5%
Cronk & Carrier Mfg. Co.; American Button. 807 Improved Button. 75&10 Cronk's 60 No. & Linemen's 50 Stub's Pattern 45
Combination and others33%
Heller's Farriers' Nippers, Pincers and Tools
P., S. & W. Tinners' Cutting Nip- pers
Swedish Side, End and Diagonal Cutting Pliers50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds40%

Plumbs and Levels-

Chapin-Stephens Co.:
Plumbs and Levels 30@30&10%
Chapin's Imp, Brass Cor. 40@40&10% Pocket Levels30@30&10%
Extension Sights30@30&10%
Machinists' Levels40@ 0&10%
Disston's Plumbs and Levels60&10% Disston's Pocket Levels60&10%
Stanley's Dulex35%
Woods' Extension3314%

Points, Glaxiers'-

Bulk	and	1-1b.	pa	pe	278	١.			th	9 é
14-13.	pap	ers	**				*	×	lb	91/26
34-13.	pap	ers							16	10 é

Police Goods-

Manufacturers' Lists . . . 25@25&5%

Polish-Metal, Etc-

George William Hoffman: U. S. Metal Po.ish Paste, 3 boxes, & doz. 50¢; & gro. \$	0Z.
½ lb boxes & doz. \$1.25; boxes. & doz. \$2.25.	1 lb
U. S. Liquid, 8 oz. cans, \$ 0 c. \$1.25.	
Barkeepers' Friend Metal Polisi doz., \$1.75,	n, 19

Stove-

J	50 9- 10
	₩ m 10 c
	Black Eagle, Liquid, 1/2 pt, cans
	₩ doz. 75
	Black Jack Paste, % fb cans, \$9 gr. \$9.0
	Diack Jack I aste, 74 in Cails, F. gt. 45.0
	Black Kid Paste, 5 fb can., each, \$0.6
	Ladd's Black Beauty Liquid, per
	100 tins\$6.7
	T 100 - 00 TF 100
	Joseph Dixon, @ gr. \$5.75
	Dixon's Plumbago 10 86
	Fireside 🛱 gr. \$2.5
	Gem, P gr. \$1.5010°
	Gem, 4, 8t. 51.00
	Japanese
	Jet Black
	Peerless Iron Enamel, 10 oz. cans
	recriess from Enamer, to oz. cans
	39 doz. \$1.5

Poppers, Corn-

Plack Faule P

1 qt. Square...doz. \$0.80; gro. \$8.75 1 qt. Round...doz. \$0.90; gro. \$10.00 1½ qt. Square..doz.\$1.00; gro.\$11.00 2 qt. Square...doz.\$1.25; gro.\$13.50

Post Hole and Tree Au-gers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel-

Steel Fence Posts. each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢. Steel Hitching Posts.....each \$1.30

Potato Parers-

See Parers, Potato. Pote Glue-

LOCA	8 ,	u	11		10	2	_					
Enamele	ed			0		0	0	0	•			. 354 10%
Tinned		×									×	.30£10%

Powder-

In Canisters:
Duck, 1 lb each 45
Fine Sporting, 1 lb each 75
Rifle, 14-lh each 18
Rifle, 1 lbeach 25
In Kegs:
121/2-lb, kegs\$3.5
25-1b. kegis
King's Semi-Smokeless:
Keg (25 lb bulk)\$6,5
Half Keg (121% lb bulk)\$3.5
Quarter Keg (61/4 lb bulk)\$1.9
Case 24 (1 fb cans bulk)\$8.5
Half case (1 fb cans bulk)\$4.5
King's Smokeless: Shot Gun, Rifle
Keg (25 fb bulk)\$12.00 \$15.0
Half Keg (121/2 lb bulk) 6.25 7.7
Quarter Keg (614 lb bulk) 3.25 4.0
Case 24 (1 1b cans bulk) 14.00 17.0
Half case 12 (1 fb c, bk) 7,25 8.7

Presses-

Fruit and Jelly-

Pruning Hooks and Shears See Shears.

Pullers, Nail-

Cyclops Miller's Falls, No.	
Morrill's No. 1, 1	Nail Puller, \$2 doz.
Pearson No. 1, C:	clone Spike Puller,
The Scranton Co.	
No. 3B (small) Smith & Hemeny	\$5,0
Diamond B	
Staple Pullers,	Utica and Davi-

Pulleys, Single	W n	061	_
Inch	13/	2	3
Auening or Tackle,	- 49		
daz \$0.30	.45	.60	1.05
Hay Fork, Swivel or	Soli	d E	ye,
doz., 4 in., \$1.2	5; 5	in.,	\$1.55
Inch	2	21/4	21/2
Hot House, doz \$0	.65	.85	1.20
Inch	11/2	13/4	2
Screw, doz \$0.16	.19	.23	.30
Inch			21/2
Side, doz\$0.25	.40	.55	.60
Inch 114	13/	9	91/

Sach Dulleys

Sasti Fulleys
Common Frame; Square or
Round End, per doz., 1% and
2 in
Auger Mortise, no Face Plate.
per doz., 1% and 2 in 20@216
Acme, No. 351% in., 19¢; 2 in., 201/2¢
American Pulley Co.;
Wrought Steel American Plain

		American	
Wrought	Steel, 1	Eagle	17@20
Top Note	ch, Ele	ectrically	Welded.
Nos. 3 1	and 4		19
Fox-All-Ste	el, Nos.	3 and 7,	2 in
		3	doz. 50

Grand Rapics All Steel Noiseless. 50 Niagara, No. 25, 1% in., 19¢; 2 in. No. 26 Troy..1% in., 14½¢; 2 in., Star, No., 26...1% in., 19¢; 2 in., Tackle Blocks—See Blocks.

Pumps-

Cistern							 	60	
Pitcher									
Wood I									
Barnes I	Dbl.	Ac	ting	(lo	w l	ist)	 .40	8.5	

	Barnes Pitcher Spout
ĸ	2. B. & L. Block Co\$16.00
	Daisy Spray Pump & doz. \$6.5
	Flint & Walling's Fast Mail Hand
	(low list)50%
	Flint & Walling's Fast Mail (low
	list)
	Flint & Walling's Tight Top
	Pitcher
	National Specialty Mfg. Co., Measur-
	ing, Nos. 2, \$6.00; 3, \$5.5030%
	Myers' Pumps (low list)40&5%
	Myers' Power Pumps40&5%
	Myers' Spray Pumps40&5%

Pump Leathers-

Plunger and	Valve	Leath	ers-	Per
gro.:				
No 1	2	3	4	
	6.00	7.00	8.00	30
Cup Leathers	-Per	100:		2
Inch 25	6 3	31/2	4	1 0.
\$5.0	0 7.00	9.00	12.00	1

Punches-

Saddlers' or Drive, good, doz.50@75	
Spring, single tube, good quality\$1.	
Revolving (4 tubes) doz. \$3.	ő
Bemis & Call Co.'s Cast St'l Drive.50	ò
Morrill's Nos. 1AA, 1A, 1B, 1C,	
1D, \$15.0050	
Hercules, 1 die, each \$5,0050	
Niagara Hollow Punches	Ą
Niagara Solid Punches55&10	ő
Tinners' Hollow, P., S. & W. Co. 40	ľ
Tinners' Solid, P., S. & W. Co., W	ı
doz., \$1,4440	Ö

Rail-Barn Door, &c.-

Sliding Door, Painted Iron,	
21/2(0	23/
Sliding Door, Wrought Bras	8.
114 in 1b 366	.30
11/4 in., lb., 36¢	ger
Track	10
Cronk's:	
Double Braced Steel Rail Fft.	31/4
O N T Pail	6.3

Cronk's: Double	Braced	1 Steel	Rai	119	ft.	31/4
O. N.	r. Rail	******		****	***	.\$3.1
Griffin's:		1 x	3-16	in	\$3	,25;
1¼ x Hinged	3-16 in.	\$3.75				

in., \$3.50; 1%	x 3-16	n., \$4.0	0.
Lane's:			
Hinged Track,	₹9 100	ft	\$3.4
O. N. T., 10 10			0; 1%
in., \$3.45; 11/2	in., \$4.	00.	
Standard, 14 i	D	100	ft. \$4.0
Lawrence Bros. :			
1 x 3-16 in. 39	100 ft.	\$7.50:	1¼ x
3-16 in., \$8,75.			58.742
McKinney's:			
Hingad Hange	Thook	20 64	22.4

Hinged	Hanger	Track,	a ft.	. 11 e
				60&5
1 x 3-16	Track			55 & 71/2
Myers' St	tayon Tr	ack	******	60&59
Richards	Mfg. Co	0.:		
Commo	n, 1 x 3	-16 in.,	\$3.00;	1% x
3-16, \$	3.25: 114	x 3-16.	\$3.50.	
Special	Hinged	Hanger	Rail.	.60 & 10
Lag Scr	ew Rail	No. 65		50
Gauge 7	Prolley T	rack, W	ft., 1	No. 31,
04 . 3	20 90 1	14 4 1 30	22	90 4

Rakos-

	OTE1		good	ls are	sol
	Madison Madison				
Que \$2 An Ma	k's: el Gard deal, 80% een City 2.85; 24, \$ ticlog La lleable G al Steel	Lawn 3.00 wn, arden	tor W do	z., 20 te	0&25 eth, ne \$4.0

\$15.00; 14, \$16.00; 16, \$18.0	080	ď,
Kohler's:		
Lawn Queen, 20-tooth ?	doz. \$3.	.1
Lawn Queen, 24-tooth	doz, \$3	.2
Paragon, 20-tooth	doz. \$2	.7
Paragon, 24-tooth	doz. \$2	7
Steel Garden, 14-tooth	doz. \$2	4
Malloable Candon 14 tooth	39 doz	

\$2.00@2.25 Rasps, Horse-

Disston's	75%
Heller Bros	1045%
Liveright Bros.' Gold Medal.70&1	0@75%
McCaffrey's American Standard	
	10&5%
New Nicholson70&1	0@75%
See also Files,	

Rezors-

Lian	a E	o-ras-ic			******	6
Fox	Razo	rs. 33 c \$20.00;	loz.,	No.	42, \$20.	(:00
No.	44.	\$20.00;	No.	82,	Platin	1a. } .
\$25.	00.	000.00	2400	ou,	2 40000	1

Reels, Fishing-

Hendryx:

M 6, Q 6, A 6, B 6, M 94 M 1
Q 16, A 16, B 16, 4008, Rubbe
Populo, Nickeled Populo,
Aluminum, German Silv., Bronze,
1240 N. 124 N
1240 N, 124 N 3004 N, 06 N, 6 RM, G 9. 1 N, 6 PN 24 N 26 PN 2904 P. 33'4%; 2904 PN. 33'46' 0924 N. 33'46'; 02084 N. 33'46'
1 N. 6 PN 24 N. 26 PN
2904 P., 331/4%; 2904 PN., 331/49
0924 N., 331/4 %; 02084 N., 331/4 9
002904 PN., 331/4 %; 802 N., 331/4 °
986 PN, 2904 N, 974 PN
002904 PN., 33½½; 802 N., 33½° 986 PN. 2904 N. 974 PN. 5009 PN. 5009 N.
Competitor, 102 P, 102 PN, 202 I 202 PN 102 PR, 202 PR
202 PN 102 PR, 202 PR
304 P. 304 PN, 00304 P, 00304 PN.33
Andreas and the second of the

Registers-List July 1, 19:3.

Japanned, Electroplated and

Revolvers-

Ringle	Actio	190	١.									*	5	é	a	\$1.00)
Double	Acti	0	n,	e	x	c	ej	pi	ŧ	4	4	(36	ıl		\$2.00	1
Double	Acti	0	n	1	15		C	a	11	i	P	8				\$2.00	1
Autome	itic															\$4.00	1
Hamme																	

Riddles, Hardware Grade

16	in.					per	doz. \$2.50@ \$2.75
17	in.	٠,				per	doz. \$2.75@\$3.00
18	in.					per	doz . \$3.00@ \$3.25

Rings and Ringers-Bull Rings-

				21/2	3 tuch.
Steel .				0.75	ONO dos.
Copper			. \$1.10	1.25	1.65 doz.

Hog Rings and Ringers-

Hill's Rings, gro. boxes \$4.50@\$4.50 Hill's Ringers, Gray Iron, doz., 60@75¢ Hill's Ringers, Malleable Iron, doz. 80@35¢ Blair's Rings. per gro. \$5.00@\$5.50 Blair's Ringers...per doz. 75@90¢

Rivets and Burrs-

Copper .		50@ 5065%
		Tinners', &c
Black .		70 € 10 %
Metallic	Tinned.	209

Bifurcated and Tubular-

Assorted in Boxes. Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢. Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers-

Cronk's	Stay.	No.	50					\$1.00
Cronk's	Brin	kerh	off	No.	5	5.	\$0.	60;
No.	56, \$0,	.75;	No.	60.				\$0.75
Lane's	Stay							.40%
Richard	s' Sta	y:						
Handy	Adj.	and	Rev	ersi	ble	No.	53	.75 €
O. K.	Adj.	and	Rev	ersi	ble	No.	. 58	.50 €
Lag 8	crew.	Nos.	55	and	57			.50 %
Under	writers	' N	08.	59.	60			.50%
Favor	ite, No	0. 5						.60%
-								

Rope

Manila, 7-16 in. diam. and larger:
Pure
Sisal, 7-16 in. diam. and larger:
Pive
Sisal, 7-16 in. diam. and larger:
lower grade 1b., 61/2@7¢
Sisal, Hay, Hide and Bale
Ropes, Medium and Coarse:
Mixedlb., 61/2 @ 63/4 ¢
Pure
Yarn, Coarse and Untarred:
Mixed
Pure
Cotton Rope:
Best, 14-in. and larger 18 @ 20¢
Medium, 1/4-in, and larger, 16 a 17¢
Common, 1/4-in. and larger 10¢
In coils, 1/2¢ advance.
Jute Rope:
Thread, No. 1, 4-in. and up.
1b. Thread, No. 2, 4-in. and up.
Thread, No. 2, 4-in. and up.
1b5%¢
Wire Rope-

Rules

Chapin-Stephens Co.:
Boxwood60%
Flexifold40%
Ivory25@25&10%
Miscellaneous50@50&10%
Stephens' Combination
Stationers'
Keuffel & Esser Co. :
Folding, Wood
Folding, Steel
Lufkin's Steel
Lufkin's Lumber50&10%
Upson Nut Co.:
Boxwood
Ivory35&10@35&10&10%
100000000000000000000000000000000000000

Sash Balances

See Balance, Sash.

Sash Locks-See Locks, Sash.

Sash Weights-

See Weights, Sash.

Sausage Stuffers or Fillers See Stuffers or Fillers, Sausage.

Saw Frames— See Frames, Saw.

Saw Sets-See Sets, Saw.

Saw Tools- See Tools, Saw.

Saws-	Rolled Thread, F. H. or R. H.,	Forged Handles, Steel Blades, Berlin	Slates, School-
kins': 'ircular	F. H. or R. H., Brass, Nos.	Heinisch's Snine 40%	Factory Shipments.
Band	8 to 14	Jennings & Griffin Mfg. Co.'s 6½ to 10 in	"D" Slates50@50&10% Eureka, Unexcelled Noisless
ross Cuts. 35% One-Man Cross Cut. 40% Narrow Cross Cut. 55%	Set and Cap-		Victor A, Noiseless 60d5 tens wa /
Narrow Cross Cut	Set (Iron)	P. S. & W. Forged Handles, 25%; W. R. W. 40&10% J. Wiss & Sons Co.: Wiss Forged Steel	
Hand, Rip and Panel35&5% Miter Box and Compass40%	Iron	Wiss Forged Steel25%	Slaw Cutters—See Cutters.
Miler Box and Compass. 40% Mulay, Mill and Drag. 45% Vocad Saws. 40%10% hapin-Stephens Co.: 30638410%	Hex. 11d. Cap	Pruning Shears—	Snaps, Harness— German
	Fillister Hd. Cap	Cronk's Hand Shears	Covert Mfg, Co.: Derby, 25%; Yankee, 33&2%; Yankee
amond Saw & Stamping Works: sterling Kitchen Saws30&10&10%	Wood-	Disstan's Combined Pruning Hook	Roller, 30&2%.
sston's:	List July 23, 1903.	and Saw, \$\pi\$ doz. \$18.00	High Grade, 40%; Trojan40% Jockey25%
Sircular, Solid and Ins'ted Tooth.50% Band, 2 to 18 in, wide60%	Flat Head Iron 871/456 %	doz. \$12,00	Snaths-
Band, ¼ to 1¼	Round Head, Iron85&5@% Flat Head, Brass80&5@%	Pruning Shears, all grades40% P. S. & W. Co10&10%	Scythe
arrow Crosscuts	Round Head, Brass 77/2000 %	Columbian Cutlery Co.: Hedge, Wilcut Brand60&10%	Snips, Tinners-See Shans
Framed Woodsaws	Flat Head, Bronze75&5@% Round Head, Bronze.721/2&5@%	Lawn and Border, Wilcut Brand, 60&10%	Spoons and Forks-
Voodsaw Blades	Drive Screws871/265@	Sheaves- Sliding Door-	Silver Plated-
Hand Saws, Nos, 12, 99, 9, 16, d100. D8, 120, 76, 77, 8	Scroll Saws -	Reading	Good Quality50&10@60.65%
	See Saws, Scroll.		Cheap
ompass, Key Hole, &c25% autcher Saws and Blades30%	Scythes— Per doz.	Sliding Shutter—	1847 Rogers Bros., 40&10%; Rogers
E. Jennings & Co.'s: ack Saws	Grass, No. 1, Plain \$7.00@7.50	Reading list	Rogers & Bro. William Rogers
utcher Saws	Clipper, Bronzed Webb. \$7.25@7.75 No. 3 Clipper, Pol'd Webb,	Shells-Shells, Empty-	Eagle Brand
ompass and Key Hole Saws, 331/4&71/2%	No. 6 Clipper and Solid Steel,	Brass Shells, Empty: Climax, 10 and 12 gauge65&10% Club, Rival, 65&5%; First Quality.	Miscellaneous
ramed Wood Saws25&7½% and Saws12½%	\$7.75@8.25	Club, Rival, 65&5%; First Quality.	German Silver
food Saw Blades33%&7½% lers Falls:	Bush, Weed and Bramble, Nos. 11, 12 and 13\$7.25@7.75	60&5%	Tinned Iron-
utobox Sawe 15&10°	Grain, No. 1\$9.00@9.50	Paper Shells, Empty: New Rapid, 10, 12, 16 and 20 gauge, 25&10%	Teas per gro . 50@556 Tables per gro . \$0.90@\$1.00
tar Saw Blades	Bronzed Webb, No. 1\$9.25@9.75 Nos. 3 and 4 Clipper, Grain,	Climax, 10 and 12 gauge; Acme, 10,	Springs- Door-
ictor Kitchen Saws40&10&50% autcher Saws Blades35@40%	89.50@10.00	12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade,	Bardsley's Spring and Check40%
ice & Richardson's Hand Saws.30%	Solid Steel, No. 6\$10.00@10.50	Union League, 12 and 12 gauge:	Chicago (Coil)
ircular Saws45%	Seeders, Raisin-	Rival Grade	Pullman Door and Gate
rescent Ground Cross Cut Saws.30% ne-Man Cross Cuts40&10%	Enterprise25@30%	16 and 20 gauge; Climax, 14, 16	Iteliance (Coil)
ang Mill, Mulay and Drag Saws.45% and Saws	Sets- Awl and Tool-	Challenge, Monarch, 10, 12, 16 and	Carriage, Wagon, &c.—
utcher Saws	Fray's Adi. Tool Handles, Nos. 1, \$12: 2, \$16: 3, \$12	and 20 gauge. 20&5% Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. 20%	11/4 in. and Wider: Per 100 lb
and Saws	2, \$16; 3, \$12	Shells, Loaded-	Black
ompass, Key Hole, &c25@25&71/2%	Garden Tool Sets-	Loaded with Black Powder. 40% Loaded with Smokeless Powder,	Bright\$5.25@\$5.5
reeler, Madden & Clemson Mfg. co.'s Cross Cut Saws	Ft. Madison Three Plows, Hoe, Rake and Shovel	medium grade 40&5%	Painted Seat Springs: 1½ x 2 x 26per pair.45@476
o.'s Cross Cut Saws50%		Loaded with Smokeless Powder,	1/2 x 3 x 28 per pair . 68@716
Hack Saw Blades and Frames—	Sets, Nall- Octagongro.\$3.50@3.75	high grade40&10&10% Union Metallic Cartridge Co.: New Club. Black Powders40%	Sprinklers, Lawn-
kins' Hack Saw Blades A A A 25%	Buck Bros	Nitro Club, Smokeless Powders, 40&5%	American Foundry & Mfg. Co.: Cactus, 65%; Japanese, 70%; Na-
eston's '	Cannon's Diamond Point, \$\text{9} \text{ gro. \$12,} \\ 40&10\text{\%}	Arrow, Smokeless Powders, 40&10&10% Winchester:	tional, \$2 doz\$12.00
oncave Blades	Mayhew's	Smokeless Repeater Grade40&5% Smokeless Leader Grade40&10&10%	Enterprise
lack Saw Frames	Snell's Corrugated, Cup Pt40&10% Snell's Knurled, Cup Pt40&10% Victor Knurled, Cup Pt gro. \$7.50	Black Powder40%	_
fack Saw Frames, Nos. 175, 180	Rivet-	Shingles, Metal-Per Sq.	Squares-
40&71/2% lack Saws, Nos. 175, 180, complete.	Regular list	Edwards Mfg. Co.: Painted. Galv.	Nickel plated \ List Jan. 5, 1900. Steel and Iron. \ 80@80&5%
odell's Hack Saw Blades40&10%	Saw-	14 x 29\$4.25 \$6.00 10 x 144.50 6.25	Rosewood Hdl. Try Square and
iffin's Hack Saw Frames35&5&10%	Atkin's:	7 x 10	fron Hdl. Try Squares and T-
ffin's Hack Saw Blades35&5&10% r Hack Saws and Blades15&10%	Criterion	Dixie, 14 x 20 in\$4.25 \$5.50	Revels 40&10@40&10&10% Disston's Try Squares and Bevels,
rling Hack Saw Blades30&10&5% rling Hack Saw Frames30&10&10%	Disston's Star, Monarch and Tri- umph30%	Dixie, 10 x 14 in 4.50 6.00 Dixie, 7 x 10 in 5.00 6.75	Rosewood Handle, 60 & 10%; Iron
erling Power Hack Saw Machines, ach, No. 1, \$25.00; No. 2, \$30.0019% ctor Hack Saw Blades20%	umph	Shoes, Horse, Mule, &c	Stock and Bevel15%
tor Hack Saw Blades20% tor Hack Saw Frames10%	No. 5, Mill	F.o.b. Pittsburgh:	Squeezers, Lemon
hitakor Mfg Co .	No. 1 Old Style\$10.00 }	Ironper keg. \$4.10 Steelper keg. \$3.85	Wood, Porcelain Lined: Cheap
Vational Hand Blades	Special	Burden's, all sizes % keg \$3.90	Good Grade doz. \$1.2:
	Giant Royal Cross Cut 2 doz. \$8.00 Royal, Hand 2 doz. \$4.50 Taintor Positive 2 doz. \$6.75	Shot— 25-1b. bag.	Tinned Irondoz. \$0.75@1.25 Iron, Porcelain Lineddoz. \$1.75
Scroll-	Shaving-	Drop, up to B	Staples-
mes, No. 7, \$15	Fox Shaving Sets, No. 30	Drop. B and larger 2.05 Buck 2.05	Barbed Blind
nes' Velocipede Power Scroll Saw, ithout boring attachment, \$18:	Smith & Hemenway Co.'s	Chilled	Electricians' 80&10&10@85%
thout boring attachment, \$18: ith boring attachment, \$2020% ter, complete, \$10.0015&10%	Sharpeners, Knife-	Dust 2.30	Fence Staples, Plain, \$2.15; Galvanized
gers, complete, \$3.50 and \$4.00 15&10%	Pike Mfg. Co.:	Shovels and Spades-	Poultry Netting Staples
	Fast Cut Pocket Knife Hones,	Association List, Nov. 15, 1902, 10% Avery Stamping Co40%	per 1b. 31/4@31/20
Scales—	Mounted Kitchen Sand Stone.	Snow Shovels-	Dick's
nion Platform, Plain.\$2.10@2.20 nion Platform, Stpd.\$2.20@2.30	Natural Grit Carving Knife	Wood and Mall, D Handle.	Foster Bros
itillon's:	Hones & doz\$3.00 Quick Cut Emery Carving Knife Hones, & doz\$1.50 Quick Edge Pocket Knife Hones, & doz\$2.50	\$3.75@\$\.00	Steelyards 30@30&10%
averite	Rnife Hones, \$\forall doz\\$1.50 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Sieves and Sifters-	Stocks and Dies-
avorite 40% rocers' Trip Scales 50% e Standard Portables 40% Standard R. R. and Wag-	Hones, 😝 doz\$2,50)	Hunter's Imitation	Blacksmiths'50@50&10% Curtis Rev'ble Ratchet Die Stock25%
Standard R. R. and Wag-	Skate-	gro. \$9.50@10.00 Hunter's Genuine	Derby Scrow Plates 95
	Smith & Hemenway Co., Eureka50%	per gro. \$12.00@12.50	Green River
Scrapers— x, 1 Handledoz \$2.00@2.25	Shaves, Spoke-	Sifters, Ash-	Little Giant
x, 2 Handle doz \$2.50@2.60	Wood	Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, \$3.25;	Stoners, Cherry-
ipLight, \$2.00; Heavy, \$4.50 apin-Stephens Co., Box., 30@30&10%	Bailey's (Stanley R. & L. Co.)45%	Sieves, Seamless Metallic	Stones-Oll, &c.
apin-Stephens Co., Box30@30&10% hards Mfg. Co., Foot60%	Chapin-Stephens Co30@30&10 \\ Goodell's, ₹ doz. \$9.0015&10 \\	Per dozen.	
crews—Bench and Hand	Shears-	Mesh 1; 16 18 29 Iron Wire \$1.05 1.05 1.10 12)	Pike Mfg. Co., 1907 list; \$3 lb Arkansas St. No. 1, 3 to 5½ in.\$2,80 Arkansas St. No. 1, 5½ to 8 in.\$3.50
nch, Iron, doz., 1 in., \$2.50@	Cast Iron 7 8 9 in.	Tinned Wire \$1.05 1.05 1.10 12)	Arkansas St. No. 1, 5½ to 8 in \$3.50 Arkansas Slips No. 1\$4.00 Lily White Washita, 4 to 8 in .60 ¢
75: 11/4. \$3.00@3.25; 11/4. \$3.50@3.75 nch, Wood20@20&10%	Best \$16.00 18.00 20.00 gro. Good \$13.00 15.00 17.60 gro.	Sleves, Wooden Rim-	Rosy Red Washita 4 to 8 in 60 d 1.
nch, Wood	Cheap \$5.00 6.00 7.00 gro.	Nested, 10, 11 and 12 Inch.	Washita St., Extra, 4 to 8 in. 50 ¢ Washita St., No. 1, 4 to 8 in. 40 ¢
apin-Stephens Co., Hand	Straight Trimmers, &c.: Best quality Jap70@70&10%	Mesh 18, Nesteddoz. \$0.90@0.95 Mesh 20, Nesteddoz. \$1.00@1.05	Washita St., Extra, 4 to 8 in., 50 ¢ Washita St., No. 1, 4 to 8 in., 40 ¢ Washita St., No. 2, 4 to 8 in., 25 ¢ Lily White Slips
ach, Lag and Hand Rall-	Best quality Nickel60@60&10%	Mesh 24, Nested doz. \$1.30@1.40	
g. Cone Point 80d5@80d10%	Tailors' Shears40@40&10% Acme Cast Shears40@40&5%	Sinks. Cast Iron-	Washita Slips, Extra
ach, Gimlet Point 80@8045% and Rail70&10@75%	Heinisch's Tailor's Shears	Painted, Standard Het: 12 x 12 to 22 x 36 in69%	Washita Slips, No. 2
Jack Screws-	60&10%; Japan Handles70&10%	20 x 24 to 24 x 50 in 50%	Ouickent Emery and Corundum Oil
indard List 70&10@75%		24 x 60 to 24 x 120 in 30% Barnes' low list:	Stone, Double Grit
llers Falls	Grass	Up to and including 20 x 36 in50 & 5%	Stone, Double Grit
Machine-	J. Wiss & Sons Co.: Best Quality Jap'd 60410	20 x 40 to 24 x 50 in	Hindostan No. 1, R'g'lar. 2 h 8e
it Tread, Iron, Brass or	Best Quality Jap'd	in lists used by jobbers.	Quickeut Emery Rubbing Bricks. 47% Hindostan No. 1, R'g'lar \$\partial \text{lb} \text{ B} \text{ b} \text{ B} \text{ b} \text{ b} \text{ l} \text{ d} \text{ d} \text{ lindostan No. 1, Small. \$\partial \text{ l} \text{ l} \text{ l} \text{ l} \text{ l} \text{ d} \text{ l} \text{ d} \text{ l} \text
Bronze: Flat Head or Round Head,	Tailors'	Skeins, Wagon-	Turkey Oil Stones, Extra, 5 to 8 in
50@50&10%	Steel Blades 2045@204109	Cast Iron	Queer Creek Slips
Fillister Head 40@40&10%	Steel Laid Blades 40&10@50%		Sand Stone 6¢ 1

Scythe etones 13
Pike Mig. Co., 1901 list: Black Diamond S. S. 29 gro. \$12.00 Lamoille S. S 29 gro. \$11.00 White Mountain S. S. 29 gro. \$3.50 Green Mountain S. S. 29 gro. \$3.50 Extra Indian Pond S. S. 29 gro. \$7.00 Extra Indian Pond S. S. 29 gro. \$7.50 No. 1 Indian Pond S. S. 29 gro. \$7.50 No. 2 Indian Pond S. S. 29 gro. \$7.50 Ouick Cut Emery 29 gro. \$10.00 Pure Corundum 29 gro. \$10.00 Crescent \$7.00 Emery Scythe Rifles, 2 Coat. \$8.80
Emery Scythe Rifles, 3 Coat.\$11.00 Emery Scythe Rifles, 4 Coat.\$13.20 Balance of 1894 list 33%% Electro (Artificial), \$250. \$12.00

Stoppers, Bottle-

Victor Bottle Stoppers...... gro, \$9.00

Stops- Bench-

Door-

Chapin-Stephens Co.......50@50&10%

Chapin-Stevens Co......20% Straps- Box-

Acme Embossed, case lots..20&10&10% Carr's Universal, case lots...20&10&10%

Stretchers, Carpet
Cast Iron, Steel Points. .doz.55¢
All Steel Socket . .doz.\$2.00@3.25
Excelsior Stretcher and Tack Hammer Combined, \$\pi\$ doz., \$\pi\$.00...20%

Stuffers, Sausage-

Sweepers, Carpet-

Bissell Carpet Swee	eper Co.: 🥡 doz
Superba, Crotch	Mahogany\$36.0
Triumph, Fancy	Veneers\$33.0
Parlor Queen. F	Veneers\$33.0 ig. Rosewood\$30.0
Elite. Hungarian	Ash\$29.00
Am Oneen Fig	Mahogany\$27.00
Ideal. Bird's-Eve	Maple\$25.00
Grand Rapids.	Nickel, \$21.00;
Japan	\$22.0
Standard, Nickel.	\$22.00; Japan.\$20.0
Crown Jewel Nick	tel, \$21.00; Jap.\$19.0
Crystal Glass To	p
Grand 17 in wi	de\$36.0
Purlor Grand	\$48.0
Club 21 in wide	\$54.00
Hall 28 in wide	\$60.00
MAIL NO III, WHIC.	***************************************

NOTE.—Rebates: See per dozen three dozen lots; \$1 per dozen on dozen lots; \$2 per dozen on ten dots; \$2.50 per dozen on twenty-five dots.

Tacks, Finishing Nails,

a.c.
American Carpet Tacks 90&40%
American Cut Tacks 90640%
Swedes' Cut Tacks 90640%
Swedes' Upholsterers' 90&50%
Gimp Tacks90&50%
Lace Tacks 90&50%
Trimmers' Tacks 90&40%
Looking Glass Tacks
Bill Posters' and Railroad Tacks,
90&50&10%
Hungarian Nails 80420 %
Finishing Nails
Trunk and Clout Nails 80& 10%
NOTE The above prices are for Straight Weights.

Miscellaneous-

Double Pointed Tacks, Bode tens@-% Se also Nails, Wire,

Tenks Oil and Gasoline

			-,	
	Wilson Gal, 30	A	Friend Co.: Gasoline	Oil \$3.00
	60 110		\$3,50 \$5,00	\$4.00 \$5.75

Tapes, Measuring-

imbest measuring
American Asses' Skin50@- Patent Leather25@30&5
Steel
Chesterman's25@25&5
Keuffel & Esser Co.: Favorite, Ass Skin:40&10@50
Favorite, Duck and Leather
25&5@25&10
Metallic and Steel, lower list, 35 35&5%; Pocket, 35@35&5%;
Lufkins:
Asses' Skin
Metallic30@30&5
Patent Bend, Leather 2845@28410 Pocket
Steel
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L,

etc. 25% Chesterman's Steel, No. 1036L, etc. 35% Teeth, Harrow- 2

* surger. . . . \$2.75@\$3.00

Thermometers-

Tin Case, Cabinet, Flange, Dairy, &c.....30@333\3% Ties, Bale-Steel Wire-Single Loop.......821/2610% Monitor, Cross Head, &c. 70621/2%

Tinners' Shears, &c .-

See Shears, Tinners', &c.

Tinware-

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c. See Benders and Upsetters, Tire.

Tools Coopers'-

L. & I. J.	White20@20&5%
	Having-
Muore' Har	Tools45%
Myers may	1 0015

Miniature-

Smith & Hemenway Co,'s, David-son, & doz., Nickel Plated, \$1.50; Gold Plated.....\$2.00

Saw-

Ship-L. & I. J. White ...

Transom Lifters-See Lifters, Transom.

Traps-Fly-

Balloon, Globe or Acme, doz., \$1.15@\$1.25; gro.....\$11.50@12.00 Harper, Champion or Paragon, doz., \$1.25@1.40; gro.\$13.00@13.50

Game-

	n Oneida
	& Norton65%
Victor	75@75&10 /
	Community Jump50%
Hector	75@75&10%

Mouse and Rat-

Mouse, Wood, Choker, doz. holes,

Mouse, Round or Square Wire, doz.85@90¢ Marty French Rat and Mouse Traps (Genuine): Marty French 18at and Mouse Traps (Genuine):

No. 1, Rat, \$\psi\$ doz., \$15.25. \$11.50 doz. No. 3, Rat, \$\psi\$ doz., \$6.50. \$5.75 doz. No. 5, Mouse, \$\psi\$ doz., \$5.25. \$1.70 doz. No. 5, Mouse, \$\psi\$ doz., \$3.85. \$3.90 doz. No. 5, Mouse, \$\psi\$ doz., \$3.80. \$3.00 doz. No. 5, Mouse, \$\psi\$ doz., \$3.80. \$2.25 doz. Oneida Community:

Out o' Sight, Mouse, \$\psi\$ doz....\$0.60 Out o' Sight, Rat, \$\psi\$ doz....\$0.60 Out o' Sight, Bat, \$\psi\$ doz.....\$1.25 Easy Set, Mouse, \$\psi\$ doz....\$1.29 Wood Choker, Rat, \$\psi\$ doz....\$1.90 Wood Choker, Rat, \$\psi\$ doz. holes, \$12 Premier Tin Choker, \$5\$ hole, \$\psi\$ doz. traps.

Premier Tindos, traps...

Trowels-

Disston Brick and Pointing25%
Disston Plastering
Disston "Standard Brand" and Gar-
den Trowels
Kohler's Steel Garden Trowels, W gro.
5 in., \$4.80: 6 in., \$6.00
Never-Break Steel Garden Trowels
30 gro. \$6.00
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c .-

B. & L. Block Co.:		
New York Pattern	50	&10
Western Pattern	60	&10°
Handy Trucks		
Grocery	doz	\$15.
McKinney Trucks each.	net	\$10.0
Model Stove Trucks	doz	\$18.

Tubs, Wash-

M'f'gr's list, price per gross. No. 0 1 2 3 Galvanized. 367 379 389 390 10471/2 4545%

Twine, Miscellaneous

Twine, Wissell and St. 21@23c
No. 9. ¼ and ½-1b. Balls. 21@23c
No. 12, ¼ and ½-1b. Balls. 16@31c
No. 18, ¼ and ½-1b. Balls. 16 @15c
No. 24, ¼ and ½-1b. Balls. 16 @17c
Chalk Line, Cotton ½-1b.
Balls. 24, @20c

India 2-Ply Hemp, 11/2-16. Ball Balls ... Linen, W-lb Balls ... 260 Mason Line, Linen, W-lb Bls. No. 264 Mattress, 14 and 14 lb. Balls, according to quality

Wool, 3 to 6 ply B 6¢; A 71/2¢

ises

Parallel-

Athol Machine Co.:
Simpson's Adjustable
Standard40
Amateur2
Columbian Hdw. Co40
Fisher & Norris Double Screw, net,
each, Nos. 2, \$10.50; 3, \$16.00; 4,
\$20.50; 5, \$27.00,
Fulton Mach, & Vise Co.:
Reed, Swivel
Star, Solid Jaw
Hollands':
Machinists'
Keystone
Lewis Tool Co.:
Adjustable Jaw
Monarch, 50%; Solid J50
Massey Vise Co.:

ner ct, 15%; Lightning Grip.....

OWN LIIOIS	
Disston's D 3 Clamp and	Guide, 19
Disston's D 3 Clamp and doz., \$34.00, 38%; Clamps. Perfection Saw Clamps, W	doz\$4.5
Reading	60%

Wood Workers-

Fulton Mach.	& Vise	Co.:	
Reed	********	*********	25%
Star			40%
Massey Vise	Co.:		
Lightning G Wyman & Go	rip, 157	Perre	et157
in., \$6.00; 9	adon a	Juick Ac	tion, o

Miscellaneous-

-	Holland's Combination Pipe
	Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No 870, 40%.
1	Rock Island Pipe
п	1A/

Wads-Price per M.

B. E., 11 up	
B. E., 9 and 10	
B. E., 8 80¢	15%
P. E., 11 up \$1.00 [.	D18.
P. E., 9 and 10 1.25	2
P. E., 8	
P. E., 7	
Ely's B. E.,11 and larger.\$1.70@1.3	
Ely's P. E., 12 to 20 \$3.00@3.2	25
Ware, Hollow-	

Cast Iron, Hollow-Store Hollow Ware:

Enameled
Ground
Plain or Unground 60%
Country Hollow Ware, per 109
lbs\$3.00
White Enameled Ware:
Maslin Kettles65&10%
Covered Wares:
Tinned and Turned 35&10%
Enameled
See also Pots, Glue.

,	200	AIDO	4 000	2 41	me.		
		En	ame	lec	1-		
Iron	Clad	TV	are		re meled.	.70 & 10	13

Tea Kettles-

Galvan	ized	Tea K	ettles		
Inch		6	7	8	9
Each		45 ¢	50¢	55¢	651

Steel Hollow Ware—
Avery Spiders and Griddles. 5545%
Avery Kettles. 60%
Porcelained 50&5650&10%
Never Break Spiders and Griddles. 65&5%

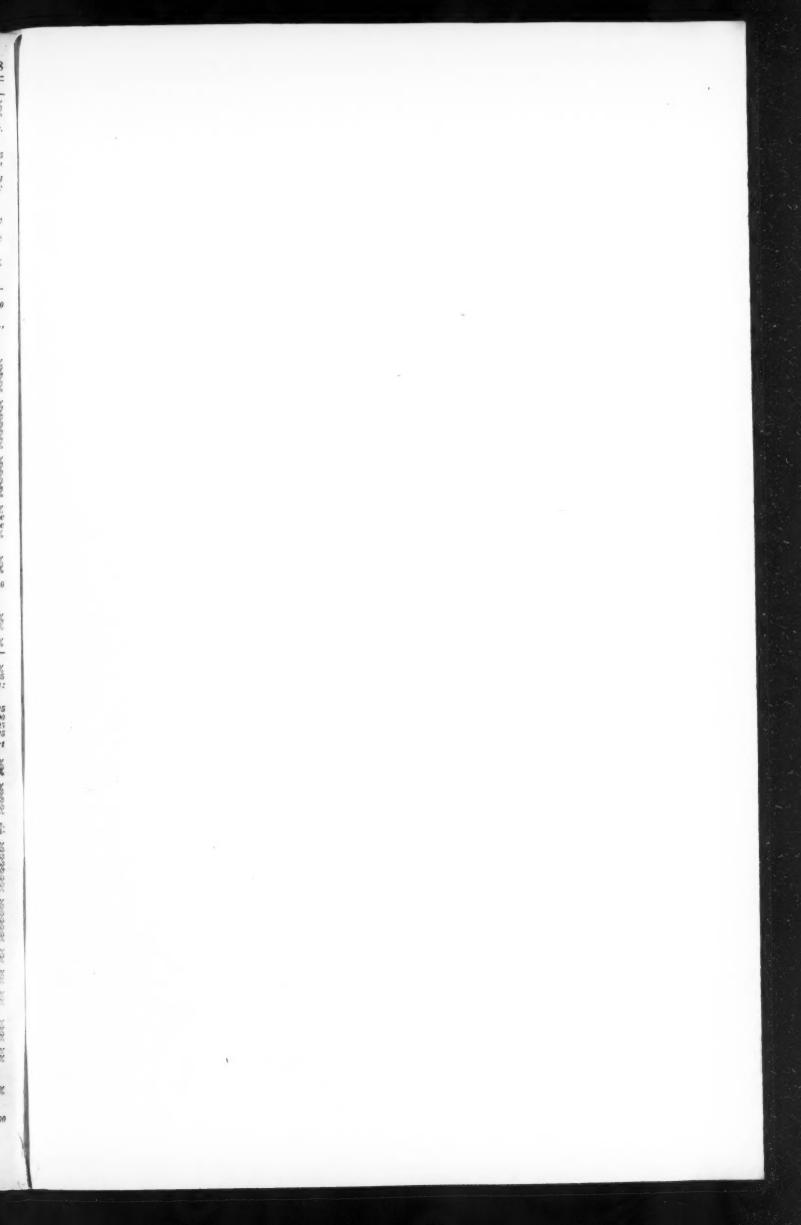
Warmers, Foot-Pike Mfg. Co., Soapstone 40@40&10%

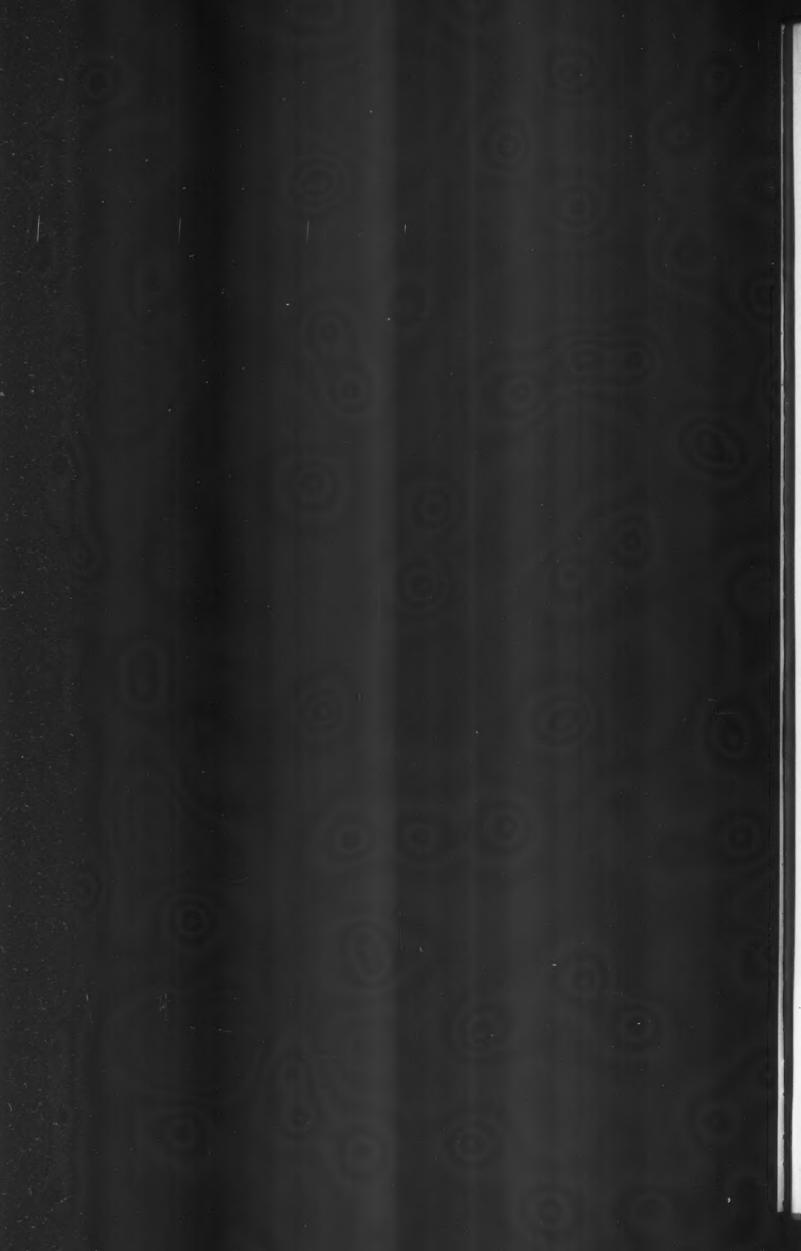
Washboards-
Solid Zinc:
protector
ary protector
Naiad, family size, open back, perforated \$3.0 Single Saginaw Globe \$2.8
Brass Surface: Brass King, Single Surface, open back
Nickel Plate Surface: No. 1001 Nickel Plate, Single Surface Glass Surface: \$3.6
Glass King, Single Surface, open back

Staples, Hooks, &c., Ust March 17, 78.....85&10&10%

Zino- (Cask lots at snill.) Sheet ner 101 1b., \$7.00

1.57





THE IRON AGE

New York, Thursday, June 25, 1908.

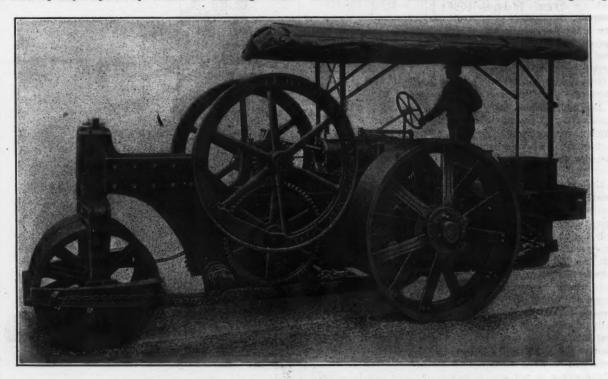
The American Motor Road Roller.

The first gasoline engine driven road roller ever made in America is declared to be the one put out by the Austin Mfg. Company, Chicago, Ill., an example of which is illustrated. It was the logical conclusion of the company that if gasoline engines can be used satisfactorily in place of steam engines in so many other fields they might be equally well adapted to the driving of road rollers. Still more to the point is the fact that motor road rollers are being used with entire success in France and England, two countries that are especially famous for their fine roads and excellent methods of rolling them. In the design of the machine it has been the endeavor to embody the best points of steam rollers and the best practice in gasoline engine construction.

The machines are built in four sizes of 7, 10, 12 and 15 tons capacity respectively. The 10-ton and larger sizes

water jacketed, the water being circulated by a pump. The same water is used over and over repeatedly and except for a slight loss by evaporation requires no replenishing. The exhaust gases from the cylinder are carried into a muffler. The crankshaft is steel, and the fly wheels are balanced to prevent vibration. A pulley can be fitted when required for purposes of power drive by belt. Although the center of gravity is low, so that the machine is not likely to capsize, the clearance over the ground is unusually great. There is a driving gear on each end of the axle just inside of the road wheels so that torsion on the axle is eliminated. The bearings are easily accessible for inspecting, oiling, and removing when required.

The machine is steered by a worm gear operating windlasses in the forward end of the frame near the bottom, and the worm gear is driven by a worm on the lower end of the hand wheel rod shown in the engraving.



The American Gasoline Engine Driven Road Roller Made by the Austin Mfg. Company, Chicago, Ill.

will haul road scarifiers, graders, road plows, or stone wagons, being, in such cases, used substantially as a traction engine, or they will furnish power to operate a rock crusher or other machines. The 7-ton size will operate a small crusher satisfactorily. The roller has a powerful truss frame made of heavy steel plates, the sole function of which is to carry the working parts. Any wearing part can be easily and quickly removed from the frame. The mechanism is comparatively simple, there being few parts. On the engine there are but two valves and these are operated by a single cam. start, stop and reverse are controlled by a single lever, and the speed of travel can be varied easily through a lever control from the slowest motion required up to the highest speed that could be needed in any roller.

The frame is supported in front on the steel yoke of the front roller and in the rear on the main axle. The engine is built on this frame and its power is transmitted by steel gears to the rear road wheels. The engine is of the four-cycle single cylinder type with high compression. The governor is of centrifugal type directly controlled from the fuel intake. The ignition is generally by a magneto, but batteries can be used if desired. The gasoline tank is below the level of the engine to which it is connected through a small pump. The cylinder is

The oscillating motion of the steering head and fork allows the front rollers to adapt themselves to irrgularities of the road. The rollers are fitted with a variable speed regulator acting through the governor on the piston speed of the engine. They have also two positive speed changes by gears, so that the rate of road travel is elastic and can be varied at will. Powerful brakes, two in number, operated by one foot lever, are provided. In case of emergency these can be operated instantly to hold the roller on a steep hill. The rear and front roller rims are specially cast to give a correct degree of hardness without brittleness. They are beveled rear and front to give them proper camber to the crown of the road and to effect this without change of pressure on the road surface or without loss of overlap in the track of the rear rollers on the front rollers. The rear wheels of the 10-ton and larger rollers are 6 ft. in diameter, and of the 7-ton 5 ft.

As points of superiority over steam rollers the company makes special mention that the fuel supply is more easily carried, enough for 10 hours' run being easily taken on the machine itself, and for three months' run in a tank which it can itself haul. A steam roller requires teams to haul water and coal. The motor road roller has no need of more than a bucketful of water a

day. A specially licensed engineer is not required; there is no loss of time in raising steam; there is not a risk of boiler explosions; there is no laying up for boiler repairs, and smoke, steam, sparks or soot blowing about are entirely eliminated. The man operating the motor road roller having simply the single lever which controls the stop and start and reverse to watch, can give his time more fully to watching the work he is doing

As the rear wheels of power rollers have to stand the wear of both drive and rolling they wear more rapidly than the front rollers. The American road roller has rear wheels with patent renewable rims which admit of replacing when worn without throwing away the centers and spokes, The rear heels can be fitted with spikes traveling over soft ground or when hauling a scarifier, grader, &c. The front and rear roller wheels are both kept free from adhering mud by adjustable scrapers on both sides.

Homer Bowes, North Side, Pittsburgh, Pa., is an agent for the American motor road roller.

The Latest Bell Steam Hammer.

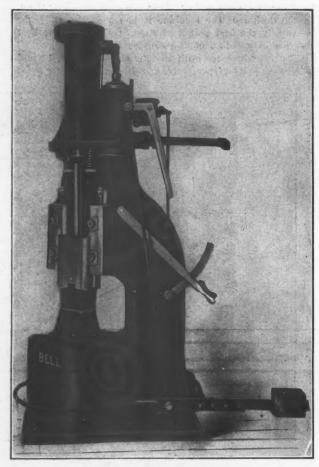
The steam hammers designed by David Bell and now made as a specialty by the Buffalo Foundry & Machine Company, Buffalo, N. Y., have been redesigned and contain a number of features that contribute to enhanced usefulness. The hammer illustrated is a combined hammer, so called because it is suitable either for light drop forged work or the heavier work requiring a standard pattern guide hammer. It is of single frame type, in which the anvil block is attached to and forms a part of the main frame casting. This construction obviates any shifting of the anvil block when the blow is struck, which movement would prevent the hammer being used on fine work where a maintained accurate alignment of the dies is necessary. The main frame casting is of open hearth steel, which is regarded by the builder to be the only material equal to the service required, as the shearing strains which come on the casting from the continued hammering and the tendency to crystallize from the constant shock and jar are considerable. fact that the hammer has balanced valve motion enables its operation to be accurately controlled even by the foot treadle, so that a blacksmith's helper may be often dispensed with. These hammers, while useful in any shop where iron or steel has to be bent or forged to shape, are especially suitable for dressing tools used on planers, lathes, boring mills, &c. The hammer is essentially a self-contained machine and therefore does not need much in the way of a foundation. Being heavy it absorbs the shock and blow of the hammering, so that there will be little vibration of the surrounding ground. Where steam is not available the hammer can be operated quite as well by compressed air. For example, a plant which uses gas engines as its source of power nearly always has compressed air supply and can use It to operate the hammer.

The guides are through bolted to the main casting, and the upper and lower dies maintain perfect alignment even when repeated blows are struck. The hammer is double acting, taking steam or air at the top and bottom of the stroke through ports arranged to give maximum force of blow. Continuously sustained automatic action may be obtained with close and sensitive regulation by the throttle valve through the foot treadle connection. The latter can be disconnected and the valve operated in the usual way by the hand lever. There are few parts in the valve motion, and these are carefully fitted to give accurate sensitive control to the blow. It is not connected except by sliding contact with the hammer head, and is therefore free from all shock or jar of the blow. The valve gear is arranged to take up its own wear, and the only attention it requires is lubrication. The valve moves downward by gravity and up by the thrust of a bevel slot in the hammer head against a cam.

The square shaped anvil block has a dovetailed slot into which the lower die is keyed. The dies are set at an angle of 45 degrees in the main frame casting, so that long work will clear the column both ways of the die and the full size of the die face. Through a hole in the

center of the anvil block long work may be inserted for upsetting. The cylinder casting is in one piece with the valve chest and has extra heavy top and bottom flanges and vertical reinforcing ribs. The throttle valve is of circular form, ground to its seat and held tight by steam or air pressure, and is operated by the swinging lever or foot treadle connection.

The hammer head is of hammered steel and is set at an angle of 45 degrees in the main frame. It is finished from the solid, and has milled V-grooves which work in V-shaped guides in the main frame. The guides are adjustable by taper gibs to take up wear between them and the hammer head. The piston rod is a solid steel forging in one piece with the piston and is secured to the hammer in a taper hole, the jam of which taper constitutes the real holding of the rod in place. By removing the buffer springs and piston rod glands, which is in halves bolted together, the falling parts can be raised without dis-



The Bell Combined Steam Hammer Made by the Buffalo Foundry & Machine Company, Buffalo, N. Y.

connecting, so that the piston projects above the top of the cylinder to permit examining the piston rings or inserting new ones.

To the under side of the reinforced cylinder flange are fastened spiral springs to cushion the up stroke and prevent injury from careless handling. When these springs are compressed solid there is still clearance between the top of the piston and the cylinder cover. An automatic force feed oil pump is furnished and supplies a constant feed of oil to the valves and cylinders while the hammer is operated. The automatic feed is easily regulated or can be augmented at will by hand operation.

The hammers are made in five sizes—100, 150, 200, 250 and 300 lb. blow capacity. The cylinder of the smallest is 4½ x 14 in. and of the largest 5½ x 16 in. The total hight of the smallest is 7 ft. 3 in. and that of the largest 8 ft. ½ in. In the smallest the usual die face is 3 x 6½ in. and in the largest 4½ x 7¾ in. These hammers are rated entirely by the actual scale weight of the falling parts, no consideration being given to the added force of the blow from the steam or air pressure on top of the piston. One set of plain forging dies, which are special open hearth steel castings, are regularly furnished with the hammer.

Some Very Large Machined Castings.

Two noteworthy pieces of work recently executed by the H. W. Caldwell & Son Company are shown in the accompanying illustrations. Fig. 1 shows a rope sheave of unusual dimensions and Fig. 2 two very large cut gears.

The sheave is 20 ft. in diameter, has 20 grooves for 2-in. rope and weighs finished 48,000 lb. It will be noticed from the illustration that the sheave has a double set of arms. The sheave was cast in one piece and then split for convenience in handling and erecting. The sheave was cast in the foundry of the Caldwell Company and finished on a 20-ft. boring mill, as indicated by the engraving. It is intended for use in the main

drive in a refrigerating plant in Mexico. The large sheave will be driven from an electric motor by what is generally known as the American or single rope system.

The gears of Fig. 2 are of a semisteel mixture, and both have a face width of 27 in. and a pitch of 3 in. The large gear weighs 13,200 lb. and has a pitch diameter of 95.51 in., and the small gear or pinion weighs 8100 lb. and has a pitch diameter of 55.41 in. The diameters of the gears are unusual on account of the small pitch, as compared with the wide face. The gears were cast in halves and the joints planed. The teeth were machined in a large gear planer; it was considered preferable to plane the teeth rather than mill them on account of the extraordinary dimensions of the rings have protecting lugs, between which are fitted suitable springs. The toothed rings are independent of each other, and act separately on their own sets of springs, so that if one chain tends to take more load than the other it simply closes its set of springs until the load is equalized. In addition to this compensating effect, the springs

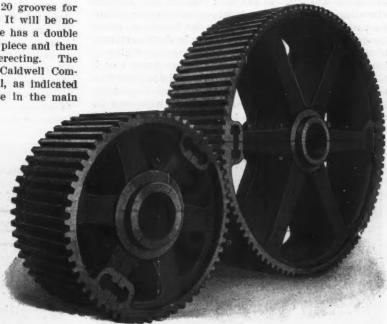


Fig. 2.—Two Gears Approximately 4½ and 8 Ft. Diameter Respectively, and of a Combined Weight of Over 10 Tons.

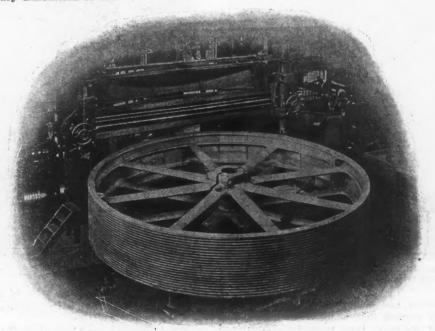


Fig. J .- A 20-Ft. Rope Sheave in Process of Finishing in a Boring Mill.

gears. The gears are to be used in the drive of a mining hoist in one of the Lake Superior copper mines. The H. W. Caldwell & Son Company's works are at Seventeenth street and Western avenue, Chicago.

Large Chain Drives.—The London Times Engineering Supplement says: "We are informed that some drives have been supplied by Hans Renold, Ltd., to Head, Wrightson & Co., intended for service at a tidal dock in Japan, and it is stated that the installation includes the largest spring wheels that have ever been made for chain driving, each weighing about two tons. The springs, which are of two sizes, have been placed alternately, the larger set transmitting the power, while the smaller softens the recoil. The even distribution of the load is effected by the special type of driven wheel employed. This is of the compensating type, and the outer and inner

absorb irregularities in the load. The pinions have 28 teeth, and are 15% in. in diameter. The large spring wheels have 108 teeth and are 60 in. in diameter, the width being 17½ in. The driver wheel makes 286 rev. per min., and the driven wheel 74, so that the ratio is practically 4 to 1, and the chain speed 1170 ft. per min. The chains are 1% in. pitch and 8 in. wide, the center distance being 11 ft. 5 in. Each chain has a breaking load of 70,000 ib., and the total pull on the drive is 5650 ib., giving a factor of 25 with the two strands.

Structural shapes and other steel products are being rushed into Mexico by trainloads by American manuacturers in order to avoid the increase of duty which goes into effect July 1, says a press dispatch from the City of Mexico. The new duty is practically prohibitive, for the benefit of the Mexican steel manufacturers.

The Brown Iron Ores of Alabama.-III.

BY WILLIAM B. PHILLIPS.

A great deal has been written in technical journals and elsewhere concerning the treacherous nature of brown ore deposits. It has been claimed that the risks attending this class of mining operations are greater than usual and that the returns on the investment should correspond with the risks. It is not to be denied that some brown ore deposits have not fulfilled the expectations of the owners, either in the quantity of ore present or in the quality. This may be said of other mining properties, not only in Alabama, but in many parts of the country. Many of the failures in brown ore mining have been due not so much to the nature of the deposit as to the char-

Shelby and Baker Hill. Ala., have been carried on so long that the present excavations are enormous. The Shelby deposits have been worked since the year 1845 and the Baker Hill deposit since 1872. At this latter locality, 97 miles east of Birmingham, the depth of the pit is nearly 300 ft. below the original crest of the hill and is now 160 ft. below the rim. The excavation there is 2000 ft. long, 900 ft. wide at the top and (counting from the original top of the hill) 300 ft. deep. At Shelby the pits are more than 100 ft. deep and cover a considerable area, although the somewhat more scattered operations there do not give one the same impression as the great pit at Baker Hill. These may be pockets, but they are certainly of great extent. From such pockets more than 10,000,000 tons of brown ore has been mined in Alabama since 1890, and from the more regular deposits of the Oriskany formation in Virginia more than



Fig. 1.—The Baker Hill, Ala., Brown Ore Pit, with Steam Shovel at Work Alongside a Bank of Clay and Ore.

acter of the mining and subsequent treatment of the ore. It is freely granted that many of the places now abandoned could not have been worked to advantage under the system then employed. So long as the ore was mixed with material that could be removed in the ordinary log washer—i. e., so long as commingled or admixed chert was comparatively a negligible matter—these deposits were worked successfully. But the brown ore deposits that can be profitably worked with the ordinary log washer and such jigging as has been practiced are few and far between. They are the gilt edge properties and have always been in demand.

Some Large Pockets.

From the very nature of most brown ore deposits, with the possible exception of some favored localities, they are more or less of a pockety character. They are not held between regular walls, except, for instance, the Oriskany ores in Virginia and certain ores in Colorado, but are bedded in an irregular manner in various clays and appear to continue with them down to the unaltered rock beneath. Some of these pockets are of great extent and have been mined for many years. The workings at



Fig. 2.--Drillers at Work on a 50-Ft. Breast of Ore.

12,000,000 tons. The total value of the brown ore produced in Alabama from such pockets in the last 20 years is more than \$15,000,000.

The accompanying views show the appearance of the Baker Hill deposit as it is at present, with the exception of the new incline which has been constructed to facilitate the hauling of the material from the bottom of the pit to the washer. Fig. 1 represents the bottom of the pit, with a steam shovel at work and the lower end of the cable for conveying the waste to the dump. In the foreground and immediately alongside of the shovel is a bank of clay and ore 50 ft. high. Below the upper right hand corner, where the small cars are seen, is the point at which the new incline from the pit to the washer track comes down, so that the ore trams are now taken direct from the pit. In the foreground and on the left is seen a great bank of clay and ore, and Fig. 2 shows drillers at work on the face and above the steam shovel. The bank where the drillers are at work is 50 ft. high, almost a solid breast of ore. At the far end of the short track in Fig. 1 a "whitehorse" (clay without ore) is seen, and the overhead cable is engaged in removing it to the waste dump, which is not shown. Fig. 3 shows another face of 50 ft. of ore behind the bank shown in Fig. 1.

A Remarkable Bed of Ore.

Baker Hill, in Cherokee County, is one of the most remarkable sights in the brown ore regions of Alabama, not only on account of the great exposures of ore, but also on account of the distribution of the ore in the clay. The excavation is now in the form of an inverted truncated pyramid, the base of which is about 900 ft. across and the bottom about 200 ft. across at the widest part. The slope is not uniform, for where the ore is most abundant the walls are practically vertical. The ore is unusually free from chert and the washing operations are of the simplest character.

The old Tecumseh charcoal furnace, shown in Fig. 4, derived its ore from this place and has the distinction of having been for seven years in blast on one lining. It was built in 1873, was 60 x 12 ft. and had a capacity



Fig. 3.-Another 50-Ft. Face of Ore.

of 15,000 tons a year. It has been idle since 1890. During its long run the average content of metallic iron in the ore was more than 49 per cent. This was probably hand picked ore, or ore very crudely washed. The present operations are giving a better ore than this, the average being about 52 per cent, in metallic iron. Baker Hill probably affords a larger supply of heavy lump ore than any other deposit in the State. The larger the proportion of this lump ore the less does the mine have to depend on the washer for shipping acceptable material. At the same time the lumps should not be so large as to require crushing before going to the furnace, "bulldozing," as it is called, or crushing by hand with a heavy hammer. The deposits of brown ore in that immediate part of the State, such as Bluffton, Rock Run, Round Mountain, &c., partake largely of the character of the Baker Hill deposit in the proportion of lump ore to gravel or wash ore.

The Geology of the Baker Hill Deposit.

Henry McCalley ("Report on the Valley Regions of Alabama," Alabama Geological Survey, 1897, Part II, page 792) puts the Baker Hill deposit in the Knox dolomite (lower Silurian), although he remarks that the ore looks like that at the top of the Weisner sandstone (Cambrian). Both Cambrian and Lower Silurian strata are developed at this locality, and the lower levels appear to be in the Montevallo shales above the Weisner sandstone. These shales are seen in considerable exposures on the west side of the hill, much above the present bottom of the pit. There are many other limonite deposits in this part of the State, 75 to 100 miles east of Birmingham, which are referred to the Knox dolomite e. g., the Carr, Dyke, Weems, Taylor and McClung. It is noteworthy that in this same horizon are to be found bauxite deposits, some of which have been worked. At Baker Hill there are extensive developments of a white and cream colored clay, high in alumina. The Knox dolomite, with the Cambrian strata which lie immediately below it (Coosa, Montevallo and Weisner), is characterized by large deposits of brown ore and is to be regarded as the chief formation for this kind of ore in east Alabama. It affords not only the lump ore, but also great deposits of gravel ore, held for the most part in reddish brown and purplish clay. These clays go down to a considerable depth and at Baker Hill are now found 300 ft. below the original crest of the hill, The disintegration of the rocks, whether dolomite or shale, has proceeded to depths at present unknown, but certainly

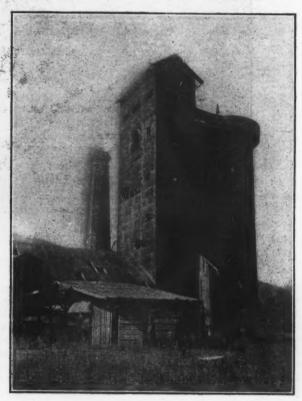


Fig. 4.—The Old Tecumseh Charcoal Iron Furnace, Which Used the Baker Hill Brown Ores.

in excess of 300 ft. This point is of importance to the miner of brown ore, for it is likely that the ore will continue to run with the clay. In these deposits it is not so much a question of the depth to the underlying rocks as of the disintegration that has taken place in them. We might expect to find, as we do find, that in certain localities this disintegration has been both extensive and intensive, altering the rocks over considerable areas and concentrating the ore along certain lines. It may be that, in places, the matrix of the ore, with the ore itself, has been washed into depressions in the underlying formations and that it does not belong to the same age as the rocks now holding it. In many cases, however, the stratification we would expect to find under these conditions is not apparent. The remoteness of the period and the plastic nature of the material filling the depressions may account for the absence of well defined stratification. After each influx of ore bearing material, the ore itself, being so much heavier, would sink to the bottom, and we would have layers of ore and layers of clay practically free of ore. If no subsequent movement took

place this would be the situation now. But we do not find it to be so, and if the deposits have been formed by the filling in of previously existing cuplike depressions there must have been a subsequent and perhaps a long continued movement by which the materials were intimately mixed. These remarks apply to such deposits as are relatively free of admixed chert and sandstone. When these are present in notable amounts we may have to refer the origin of the deposit to the inclosing rocks themselves.

The Scotch "malleable iron" manufacturers who produce bars, hoops, strips, &c., have had close working ar-

Milling Gas Engine Beds.

Fig. 1 shows a special horizontal spindle milling machine, built by the Ingersoll Milling Machine Company, Rockford, Ill. This machine has a vertical spindle and an angular spindle for milling gas engine beds, having crank shaft boxes divided on an angle without resetting the work. Fig. 2 shows three views of the engine bed to be machined, and Fig. 3 the machine in operation.

The first operation on the bed, milling the seat for the cylinder, is performed by the gang of solid cutters on the arbor, as shown in Fig 2. After the cylinder seat has been milled the rail of the machine is raised and the four

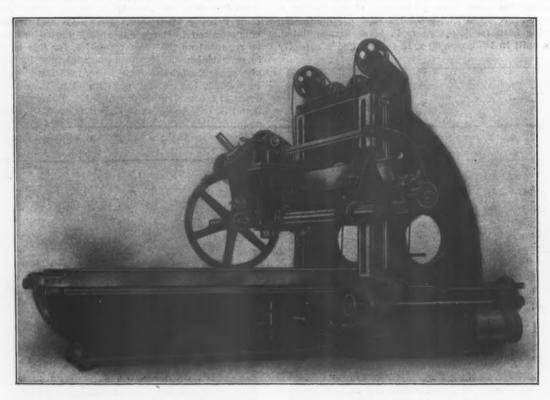


Fig. 1.-A Special Combined Horizontal, Vertical and Angular Spindle Ingersoll Milling Machine.

rangements for a good many years in their home market, though on export business the market has been open. Some of the mills have for a long time imported basic billets which have been rolled into steel bars. Two new mills started up in Lanarkshire some months ago and have been underbidding the established concerns. Efforts to bring the new sellers into the arrangement having failed, the associated manufacturers have made very deep cuts in prices. Basic steel bars and iron bars have been reduced recently 7 shillings 6 pence a ton, and hoops 5 shillings a ton. The iron bar base price is now £6 2 shillings 6 pence, less 5 per cent., the lowest figure named

since 1905. It is stated that the new price means a loss to all manufacturers and that if it does not bring the new mills into line further reductions will be made.

The Acheson Oildag Company, Niagara Falls, N. Y., manufacturer of Oildag and Aquadag, has elected the following officers: President, Edward G. Acheson, Jr.; secretary, W. H. Arison; treasurer, A. M. Williamson. The president is a son of the well-known inventor and

electric furnace expert, Edward Goodrich Acheson, who discovered the Oildag and Aquadag processes.

The United Iron & Steel Company, Pittsburgh, started up this week its Fannie Furnace at West Middlesex, Pa., which has been idle since last December.

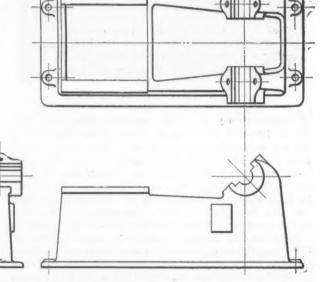


Fig. 2.—Plan and Elevations of a Gas Engine Bed, All of the Milling on Which Is Done at One Setting by the Machine Shown in Fig. 1.

large face mills (shown with the cutters for the first operation, in Fig. 2) are used to mill off the ends of the crank shaft boxes. These face mills are large enough in diameter so that the first gang of cutters used clears the boxes. After milling the ends of the boxes the pad on the side of the bed is milled with the cutter shown on

the vertical spindle, Fig. 2. The angular spindle is then used to mill out the boxes for the bearing caps. This carries a gang of cutters so that the box is finished with one pass of the spindle head across the work.

The cross feed is automatic and covers the whole width of the machine. The machine is arranged so that after once setting up the cutters there is no changing; the gangs on the arbor remain in place and move with the saddle carrying the vertical and angular spindles. The angular and vertical spindles have adjustment independent of the rail, which makes it easy to set the cutters in the positions wanted. There is a marked saving in time in finishing beds in this way, as there is no time lost in resetting the work or changing the cutters. All

Cast Iron Car Wheels Discussed.

At the convention of the Master Car Bullders' Association at Atlantic City, June 18, a report of progress was made by the Committee on Cast Iron Car Wheels. In the discussion R. F. McKenna of the Lackawanna Railroad called attention to the statement of the car wheel manufacturers that they were not given a fair chance, in view of the low prices insisted upon by some of the railroads. They claimed that if the railroads were willing to make a reasonable increase in price it would be possible to furnish a better grade of cast iron wheels. In the discussion it developed that a sentiment exists in favor of the use of the best cast iron car wheels made

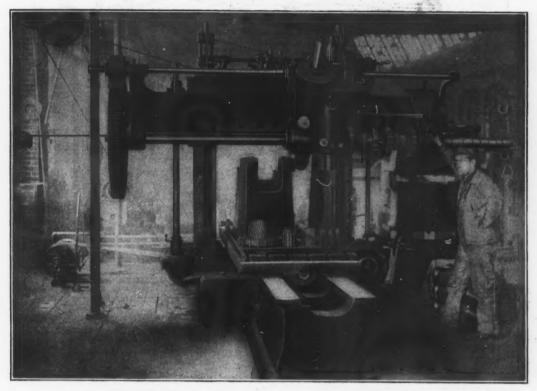


Fig. 3.—The Ingersoll Special Milling Machine Performing All Finishing on a Gas Engine Bed at One Setting.

cutters are of the simplest and cheapest forms and are inexpensive in up keep. All beds are finished alike and the accuracy and quality of the work are certain to be uniform.

The time required for doing the foregoing operations on a 10-hp. bed is two hours, and on a 40-hp. bed three hours. The machine shown has a distance of 42 in. between the housings, a table 10 ft. long, and weighs 30,000 lb. The utility of the machine for ordinary milling operations is not impaired by the special features added to it. This combination of spindles is new and a machine so equipped has proved to be a valuable addition to the line of machines built by the Ingersoll Milling Machine Company.

The British Pig Iron Market.-The pig iron situation in Great Britain shows improvement. Consumers are more willing to contract for forward delivery, and with this gain in confidence the warrant market is stronger. Short sellers of warrants were driven in in May, the squeeze causing settlements of some short sales on the basis of 56 shillings 6 pence, although as low as 49 shillings had been done in warrants for forward delivery. The cash price did not advance with that of warrants, but since the opening of June there has been a slight strengthening of makers' prices, the present basis for No. 3 being about 51 shillings. The exports of pig iron from the Cleveland district in May were 115,555 tons, which compares with 171,194 tons for May, 1907. Warrant stocks decreased 3551 tons in May and the total in Connal's stores at the end of the month was 63,433 tons. In February, 1906, when these stocks were at high point, the total was 750,000 tons.

under more rigid stipulations as to wheel mixtures and wheel foundry practice.

Indicative of the increased interest recently taken by important railroad systems in means of securing better car wheels is an elaborate article in the Railroad Age Gazette, by J. E. Muhlfeld, general superintendent of motive power of the Baltimore & Ohio Railroad. He specifies a number of steps which should be taken in order to secure better wheels, including among these a definite requirement as to the mixture to insure a quality of material giving adequate strength and resistance to the heat effect of brakes, as well as uniform wear. He refers to the discontinuance of the use of the proper mixture of charcoal pig iron as one of the causes of wheel failures, also to too large dependence on the thermal test which can be passed by wheels in which ferromanganese has been used in combination with inferior metal. Mr. Muhlfeld believes that changes can be made in the specifications for chilled cast iron wheels which will materially improve their performance and prevent a further depreciation in quality due to some of the methods in vogue in foundries as well as in the purchasing departments of the railroads. These methods, if continued, he says, will displace a commodity which can be made to meet the requirements of the railroads for many years.

The American Steel Wheel Company, Alexandria, Ind., has been incorporated, with a capital of \$250,000, to make a pressed steel vehicle wheel, which will be an exact facsimile of the ordinary wood wheel. The officers of the company are as follows: J. G. Brannum, president; J. T. Postal, vice-president; J. R. Welch, secretary; A. A. Gallman, treasurer.

The Eclipse Power Hack Saw.

An exceedingly novel power hack saw is the one recently put on the market by the Eclipse Machine Company, Elmira, N. Y., and illustrated herewith. By revolving the work while the cut is being taken it is posround pieces shown in Fig. 3 check up very accurately in the parallelism of the cut surfaces. The square section shown in Fig. 4 was cut on one side with an ordinary hack saw and on the other with the Eclipse saw. The two sides can be distinguished in the engraving. The Eclipse saw, besides doing perfect work, is claimed to saw bars of steel in about one-quarter the time taken

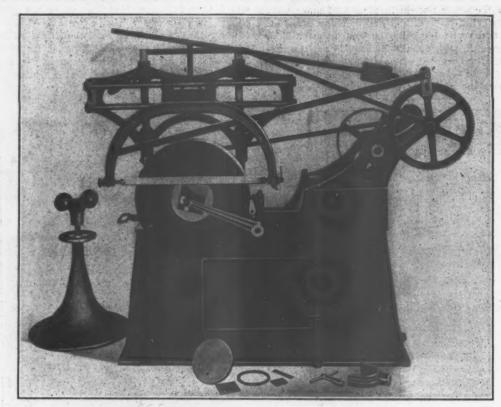


Fig. 1 .- The New Power Hack Saw Built by the Eclipse Machine Company, Elmira, N. Y.

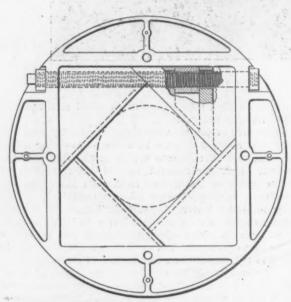


Fig. 2.—A Section of the Chuck Used on the Eclipse Saw.

sible to make an accurately square cut. The stock is revolved in clockwise rotation, as viewed in Fig. 1 herewith, and the cutting stroke is the forward one of the saw. By adjusting the balance weights so as to let the saw make a light cut in starting in on squares and flat pleces it works perfectly, and by using the adjusting collar which is on the saw guides, tubing can be cut without any difficulty.

Fig. 2 shows a section of the chuck which holds the work and is self-explanatory of the construction. It will be observed that the chuck operates by one screw, and through this it is adjustable to any size of stock from ½ up to 6 in. Figs. 3 and 4 show samples of work cut on this saw. On all such work the saw is claimed to cut with a variation of not over 2-1000 in. in a 4-in. bar. The

by other saws. A striking contention is that the machine has the speed and accuracy of a circular saw at about one-half its cost. It will also trim the ends of hexagonal or round stock in bundles, and in the range of its work is declared to excel any other.

The patent chuck for holding the material is a new and unique one, designed to hold firmly any size of round steel, from % in. up to and including 6 in. and squares up to 4 in. across the flats. It is equally effective in all sizes and shapes. The single screw which actuates it is quickly operated to clamp the work. The saw is equipped with a simple stop device for setting the stock to the length it is desired to cut off. After once being started the saw is automatic in its operation and requires little or no attention. An ordinary 20-in. hack saw blade is used, and since the stock is revolved the saw is always presented with an easy cutting surface, which saves the saw and makes it last longer, so that it is maintained that the cost for saws is less in this machine than any other. In cutting tool steel or high speed steel and in sawing cutter blanks the machine is very rapid, and since there is not the expense of truing up the faces as they come from the saw considerable time is saved, which is important in a toolroom, particularly as the tool makers are expert and high salaried workmen.



Fig. 3.—Examples of Round Stock Cut on the Eclipse Saw.

The machine itself is substantially built and has a box base with ample distribution of metal, so that it is guaranteed to stand excessive strain. In all other particulars it is also built for the severe usage which it is likely to receive. The power required to drive the machine is not over $\frac{1}{2}$ hp. The weight is 650 lb. and the floor space required 4 x 2 ft. The machine is regularly furnished with an adjustable roller rest, shown in the illustration,

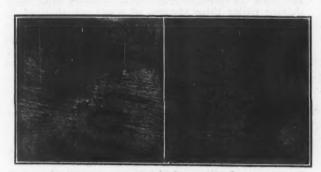


Fig. 4.—The Two Sides of a Square Section; One Side Cut with an Ordinary Saw and the Other with an Eclipse Saw.

Fig. 1, and also with three fork rests, wrenches, &c. Manning, Maxwell & Moore, Inc., 85 Liberty street, New York, are selling agents.

Allsteel Filing Units.

The development of a new line of business, which promises a large market for sheet steel, is indicated by a departure recently made by the General Fireproofing Company, Youngstown, Ohio. For some years certain forms of furniture have been manufactured of steel, notably shelving and other equipment for vaults, library stacks, bank fixtures, &c. More recently the use of sheet steel as a material has been enlarged by the manufacture of doors, moldings, window casings, and the like.

A recent bulletin issued by the United States Forestry Bureau indicates a condition in the lumber market which has been foreseen for some years by those manufacturers of various kinds of furniture who require large quantities of oak, beech and other hard woods. The investigations of the bureau indicate that at the present rate of consumption the hard wood supply will practically have been exhausted in 16 years' time. The approach of this condition is already felt. Within five years the cost of quarter sawed oak, which is used largely in the manufacture of office furniture, has advanced more than 50 per cent. If this rate of increase continues, long before the lumber supply has been exhausted, prices will have become so high that the use of lumber as a material for ordinary purposes, will be impossible.

As a substitute for wood there has been a tendency on the part of manufacturers of bank and library equipment to construct office furniture, and particularly filing devices from sheet steel. Certain advantages commend the use of steel in place of wood. For instance, on an average, a filing equipment composed entirely of steel devices will occupy 25 per cent. less floor space than an equipment of wood devices having the same capacity and built on the same general lines. As a matter of economy many wood devices are built of a cheaper wood, veneered with a hard wood, and the veneer is likely to blister, permanently marring the appearance of the piece. In some localities at certain seasons of the year there is a good deal of fog, and owners of wood devices have been annoyed by the drawers in filing cases swelling, making it hard to open them.

Agitation for fire protection and construction which will reduce insurance rates and minimize fire losses has caused the owners of some fireproof buildings in large cities to take the stand that when they have made the building as nearly as possible fireproof with metal moldings, casings and doors, it is not unreasonable that they should require their tenants to equip their offices with furniture which cannot be a menace to the safety of the building. This attitude is the outgrowth of necessity. While vertical letter files, document files and card index

cases are not uncommon, made of steel, it has remained for the General Fireproofing Company to work out in steel devices the unit sectional file idea, which has proved so successful in wood furniture. To-day this company is the pioneer in providing a complete line of these devices made entirely of steel. As indicating the material the trade name Allsteel has been adopted.

The line which is now ready for the market includes 40 separate devices, built on the unit idea. Any device may be used with any other device, horizontally or ver-The utility of this arrangement is fully understood when the requirements of the average user are considered. For filing purposes, for instance, a business man may require a vertical letter file of small capacity, and a flat letter file for invoices, &c., and document files for insurance policies, leases, and the like; perhaps a storage drawer or two, and a limited number of card index cases. Such an equipment may be had in four units, which may be placed one above the other and interlocked, so that they will not be dislodged by any sud-As the business grows and additional filing den jar. capacity is required it may be increased a sectional unit at a time. The illustration herewith shows a case built up of nine separate steel units, which from bottom to



A Typical Case of Allsteel Filing Units Made by the General Fireproofing Company, Youngstown, Ohio.

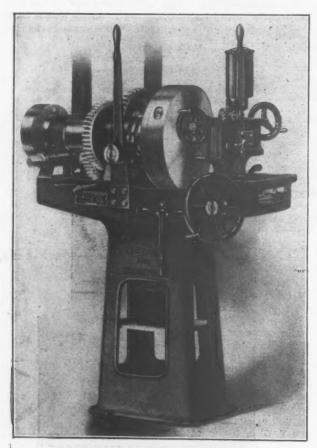
top are: Base, storage drawers, map and plan drawers, top plate, smaller storage drawers, legal blank drawers, document file, flat letter file and top plate.

In addition to the unit filing system, the General Fireproofing Company is building desks and tables of stock designs, which are carried by dealers ready for immediate delivery. All of these cases are finished, either in an enamel or plain color, and finished to closely resemble oak or mahogany grains.

Taylor & Dean, manufacturers of ornamental iron work, fencing, cellar doors, stairs, &c., are erecting a new four story steel and brick building, 48 x 100 ft., on the site occupied by one of their old buildings at Twenty-fifth street and Penn avenue, Pittsburgh, Pa. The building will contain a full line of new machinery and a power and lighting plant. It is expected that it will be completed by the latter part of this year.

A New Crane Pipe Machine.

A moderate priced pipe cutting and threading machine, known as the No. 11/4 and having a capacity of 1/8 to 2 in. pipe, has been placed on the market by the Crane Company, Chicago, Ill. It is operated by hand or power and is intended for high class service. All parts have been designed to withstand any strains that such a machine may be subjected to. Simplicity of adjustment and arrangement have been aimed at and this tool possesses many features which increase output and facilitate ease of operation. The gripping, threading, cutting-off and adjustment have been arranged to eliminate unnecessary operations. The frame is one casting, having bed and column in one piece, avoiding the use of light legs and giving the greatest rigidity with a minimum weight and floor space. The die head is bolted to a movable carriage with ample travel. Upon the die head are the dies, pipe guides and cutting-off tool. The dies are of the improved adjustable type, made collapsible, and are similar to those



The No. 11/4 Pipe Threading and Cutting-off Machine Built by the Crane Company, Chicago, Ill.

supplied in Crane hand die stocks. They are carried in frames sliding in guides. These frames are moved by a screw operated by a hand wheel. The dies are set to gauge by a simple locking device, which allows any number of pieces of pipe of the same size to be threaded without repeated adjustment. These dies have four cutting edges and are claimed to give good service on either steel or wrought iron pipe. They are made interchangeable and one die of a set may be replaced if broken, thus reducing the cost of repairs. When not in use on the machine the dies may be used in a hand stock. A change in size of dies may be made in a few seconds.

When cutting off, the pipe is guided by two steel guides, hardened on the face. These guides are operated by a right and left screw and hand wheel. The cutting-off tool is operated by a lever and rack. This makes a rapid, simple, positive and extremely powerful device. The gripping chuck is of the quick acting type, and is also very powerful. The pipe may be released and gripped by the throwing of a lever without stopping the machine. The chuck is adjustable to the different sizes of pipe within the range of the machine, without moving or altering the jaws. The jaws are of tool steel carried in steel holders and are removable for grinding or replacing. The

rear end of the spindle contains a universal centering chuck, compact in design and readily adjusted to the various sizes of pipe.

Oil is supplied by a small tank supported on a swivel joint above the die head. A second tank is placed in the frame and to this the oil from the dies returns, the supply being controlled by a pet cock. From a single-speed driving pulley three changes of speed are obtained by gears, which are shifted by a lever on the frame. This device is declared to be positive, simple and incapable of getting out of order. All machines are supplied with a crank for hand operation. Bolt dies ¼ to 1½ in. can be furnished if desired. With the machine all necessary pipe gauge blanks, wrenches, etc., are supplied. The machine occupies a floor space of 44 x 23 in. and weighs 700 lb.

The Institute of Metals.

At a representative gathering of the trades interested, held at the Institute of Mechanical Engineers, London, June 10, the Institute of Metals was formally launched. W. H. Johnson of Johnson, Clapham & Morris, Ltd., Manchester, who has been prominent in the work of founding such a society, read a number of letters of approval.

Sir William White presided. He stated that the proposed institution would extend knowledge in regard to non-ferrous metals and alloys, and would establish means of communication between members of those trades directly interested. It was proposed to exclude the question of wages and points in regard to labor. Periodical meetings would be held to discuss matters of interest and importance to manufacturers who used non-ferrous metals; they meant to exclude all reference to iron. He said that so far there had only been one contentious point raised in connection with the founding of the society, and that was the bearing the institute might have on what were called trade secrets. There was one sufficient statement which might be made to such an objection; the members would be allowed to exercise their individual right in regard to showing members of the institute over their works; and they could, of course, personally determine how far they would participate in the discussions which would be arranged. There was room enough for serious and valuable work without touching upon disputable points where they were likely to prejudice the interests of individual members. He remembered the formation of the Naval Architects' Society. Secrets were preserved in the most rigid fashion, but experience showed that there was no occasion for timidity on that account, for no difficulty ever arose. Again, in the Iron and Steel Institute there was the same idea of individual fear, which had proved groundless. He was convinced that a combination of scientific interests would be better for the individual, better for the country and better for the world.

A resolution was unanimously adopted stating that "in view of the widely recognized need for a medium of communication for the advancement of knowledge in connection with the production, manufacture and use of non-ferrous metals, a society to be called the Institute of Metals shall be and is hereby started."

The following interim council was appointed: Sir William White (president), Professor Gowland (science), Professor Turner (science), J. T. Milton, (marine engineering), Vice-Admiral Oram (marine engineering), Dr. F. Elger (shipbuilding), A. F. Yarrow (shipbuilding), Odo Vivian (copper), L. Summer (copper), J. D. Bonnor (British aluminum), Mr. Ristori (aluminum), C. A. Baeddicker (nickel), Norman Cookson (lead antimony), G. W. Nisbet (cables), R. Kaye Gray (cables), J. A. Bayliss (Birmingham trades), G. B. Hunter (shipbuilding), Williams Harvey (tin), Harry Riches (locomotive engineering), Cecil Wilson (Sheffield smelting and precious metals), Ralph Heaton (Birmingham mint) and Mr. Corfield (spelter). Prof. H. C. H. Carpenter and W. H. Johnson were appointed joint secretaries.

The Portsmouth Steel Company, which operates plate and jobbing mills at Portsmouth, Ohio, is now manufacturing a full line of Economy tin plates. The Spencer-Otis Company, Chicago, Ill., has the exclusive selfing agency for this product.

Alcohol for Power Purposes in France.

WASHINGTON, D. C., June 23, 1908.—Official inquiries were recently forwarded to United States Consul-General Robert P. Skinner of Marseilles, with regard to the status of alcohol and gasoline as power producers in France and the efforts which have been made toward the general use of denatured spirits. The statements he makes are not so encouraging as those who are hopeful of the eventual use of alcohol as a power producer would like to read.

Recent Progress.

"Former reports showed that the high cost of alcohol, excessive consumption and the resulting oxidation of mechanical parts had not been counterbalanced by any discoverable advantages. How seriously these problems have been attacked may be judged from the expression of an informant-perhaps the most important French manufacturer of carburetors-who writes under date of March 28, 1908:

We esteem the question of the industrial use of the alcohol motor as definitely solved, and the carburetors created in view of this utilization have given satisfactory results. The use of alcohol will become more advantageous when an understanding is brought about between the producers, whereby prices shall obtain some fixity, and when the State shall have solved the question of the denaturing agent.

"If ingenuity has mastered the material difficulties in the way of substituting alcohol for gasoline, commercially the problem is almost as insolvable as ever; and if it is insolvable in France, where gasoline is dear and alcohol relatively cheap, it must be still more so in the United States, where gasoline is cheap and alcohol dear. Nevertheless, with raw material available for the manufacture of alcohol in every country under the sun, and with very few gasoline producing centers, it is hardly venturing too much to assume that ere many years there will be a permanent and general use of alcohol as a source of motive power.

One Successful Use Due to Local Taxes on Gasoline.

"The one serious and sustained practical experience with alcohol as a driving force in France is that of the Campagnie Générale des Omnibus de Paris, the heavy public vehicles of which traveled 2,218,291 miles between June 11, 1906, and November 1, 1907, propelled by a mixture of 50 per cent. of carbureted alcohol and 50 per cent. of benzol. Benzol, it may be added, is of recent manufacture in France, where it is obtained by the condensation of gases recovered from coke. The company named is more than satisfied with its venture and proposes to continue the use of this mixture.

"This experiment is conclusive in its material aspects, but it is successful commercially only because of the artificially high price of gasoline in the city of Paris, brought about by the imposition of an octrol tax of 20 francs per hectoliter (\$3.86 per 26.41 gal.). The effect of this municipal taxation is such that in Paris gasoline was worth in November last 56 francs per hectoliter (\$10.81 per 26.41 gal.), against 39 francs (\$7.52) for carbureted alcohol, the octroi duty upon which is only 5.10 francs (98 cents) per hectoliter. These octrol taxes vary greatly in different municipalities, and, leaving them out of consideration, the general price of gasoline in France last November was 36 francs (\$6.95) per hectoliter and that of carbureted alcohol 33.90 francs (\$6.54). Though the advantage as to price is apparently with carbureted alcohol, it must always be remembered that the consumption of this fuel exceeds that of gasoline by about 5 per

"Thus, for the moment, while alcohol motors can be used and are used, no real economy has yet been effected by the use of alcohol as a driving fuel, granting its equal efficiency, and there is the further disadvantage that no commercial organization exists whereby automobile owners are assured of obtaining supplies throughout the country.

French Government's Interest.

"The French Parliament is now actively considering the subject in all its aspects, and the proper committee has recently summoned to its sittings various distillers

of alcohol and manufacturers interested in its use. following are translations of two letters addressed to the parliamentary commission by automobile manufacturers. A firm at Vierzon wrote:

In reply to the questions which you have addressed to us in regard to the means necessary to extend the industrial and commercial use of alcohol, we beg to say that carbureted alcohol with 50 per cent. of benzol possesses all the advantages of gasoline. This product, employed in a good carburetor, does asoline. This product, employed in a good carburetor, does not grease the motors, and only attacks the valves. The slight accumulation of grease which we have recognized arises chiefly from the denaturing agents employed by the administration. During several years we have made use of carbureted alcohol, and the only disadvantages which we have recognized are the administration of obtaining supplies while en route and the awkwarddifficulty of obtaining supplies while en route and the awkwardness growing out of the instability of prices, which discourage the partisans of alcohol.

"A concern at Billancourt wrote as follows:

We desire to state that we have few devices constructed for the use of alcohol, for these reasons: Up to this time there has been no economical reason why carbureted alcohol should be employed; on the contrary, the cost of gasoline is lower. Moreover, carbureted alcohol causes a more rapid deterioration of the motors than gasoline, on account of the presence of water which is found in the alcohol, and which, producing a condensation upon the metallic linings, causes them to rust.

In order that pure alcohol or carbureted alcohol may replace gasoline, it is necessary that the cost per horsepower be notably lower than the cost obtained by the use of gasoline.

It is possible to put motors in movement with carbureted alcohol without first heating them, although this is less easy and less sure than with gasoline; but with pure alcohol it is necessary to heat the carbureting apparatus by means of an exterior envelope before satisfactory results can be obtained. In We desire to state that we have few devices constructed for

terior envelope before satisfactory results can be obtained. In conclusion, we have only utilized alcohol or carbureted alcohol in order to conduct laboratory experiments and for one or two races in which our machines participated."

Increasing Production in United States.

In connection with Mr. Skinner's report it is interesting to note that the U.S. Commissioner of Internal Revenue reports a production of denatured alcohol in this country in the Month of May, 1908, of 321,530 gal., which is the largest month's output since January 1, 1907, the first month after the law took effect, when a large quantity of alcohol made in previous months was denatured in anticipation of a heavy demand. The increase in the production in May, 1908, as compared with the corresponding month of 1906 was nearly 100 per cent. Of the month's output, 167,277 gal. were completely denatured and 154,253 gal, specially denatured. Alcohol prepared by special formulas is used exclusively for manufacturing purposes, and the large proportion which it bears to the total product reflects the extent to which it is being utilized in a great variety of industries. The consumption of completely denatured alcohol has been limited by a lack of utilities for the production of heat, light and power, for which it is chiefly used, but a considerable expansion in the utilization of this variety of denatured spirits may be expected in the near future. The Commissioner of Internal Revenue has just issued a series of supplemental regulations liberalizing the rulings heretofore in force, and this removal of restrictions will tend to increase consumption.

The receivers for the Pope Mfg. Company have promised Vice Chancellor Howell, at Newark, N. J., to pay a total of 75 per cent. of all approved claims against the company within four months. This promise was made at the conclusion of argument as to the continuance of the business under the receivers for a year longer. The application for leave to continue was strenuously resisted by counsel for the creditors, who argued that if the stockholders desired to have the business continue they should provide capital for that purpose and not use the creditors' The report submitted showed cash in hand to the amount of \$1,200,000 and profits earned by the Hartford plant in the last six months of over \$200,000. estimated profits for the full year since the appointment of the receivers were \$405,000.

The Eric Railroad is asking bids for 15 Pacific type passenger locomotives. The company is increasing its rolling stock in expectation of a good fall business and is operating its shops with full force, repairing its cars and locomotives. A number of locomotives which it is unable to repair in its shops have been sent to outside shops for repairs.

Method of Obtaining a Circular and Uniform Chill in Rolls.*

BY THOMAS D. WEST.

The determination by actual test of the difference in strength of turned chill and sand cast rolls of like diameters, both cast from the same ladle of metal, would be very valuable to engineers and manufacturers. So far as the writer is aware, no such tests have been made. It is

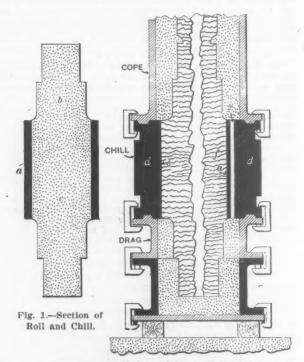


Fig. 2.—Section of Roll Mold, Showing Crust Formation Soon After Pouring.

reasonable to expect, however, that the strength of the sand cast roll will exceed that of the chill roll if both be cast from the same metal, especially if there should be any variation in the thickness of the chill. This view will doubtless be shared by those who have had extended experience in the use of chill rolls.

In casting a chill roll the general conditions are as shown in Fig. 1. The metal in the outer part, a (shown in black) will present a white appearance for a depth of $\frac{1}{4}$ to 2 in. or more, while that in the necks and body, b and c, will be mottled or nearly gray. In a the carbon exists in the combined form, while in b and c it is largely graphitic. The fact that the shrinkage of the former in solidifying is considerably greater than that of the latter is an important consideration in the manufacture of rolls. If two test bars, under 2 in. square in section, be cast from the same ladle, the one in an iron the other in a sand mold, the contraction of the former will be about twice that of the latter. This is shown by tests made by the author, treated more fully in his "Metallurgy of Cast Iron" (pp. 413-415).

When a chill roll mold is being filled with metal the cooling qualities of the chill d, Fig. 2, cause the outer body of the inflowing metal, as it comes in contact with the chill face e, to solidify so rapidly that a contracting crust is formed in 2 to 5 min., according to the diameter of the roll.

The formation of the sustaining crust is easily explained as follows: On the side e, Fig. 2, the metal is shown as it fills the mold, while on the opposite side f the ditions that exist 2 to 5 min. after the roll is cast are indicated. It is seen that the chill d has ceased to offer any support to the crust a by reason of the space created at x, and that the chill d might be removed, so far as the body of the roll is concerned, if that were practicable. It is also evident that the metal inside of the crust a and

the necks of the rolls is still in almost as hot and liquid a condition as when first poured. Its fluidity may, in fact, be maintained for 20 to 60 or more minutes, according to the size of the roll. This condition serves to explain in large part the difficulty of obtaining satisfactory chill rolls. The thin, almost semi-molten, crust a must sustain during the early period of the operation the static pressure of the confined liquid metal. The result in obtaining a chill roll castings is affected by small variations in the level of the mold, the quality of the metal, the temperature in pouring, the catching of fins at joints or crevices in the face of the chill, the operation of feeding devices, &c. It is no wonder, therefore, that with a process so sensitive and difficult to regulate that the losses range from 10 to 30 per cent. of the nominal output by the systems now in use, and that the rolls cast in this manner are rarely truly circular with a uniform thickness of chill.

Again, a buyer who accepts a roll of uneven thickness of chill and not truly round runs great risk of breakage. It is certain, at least, that such rolls cannot stand the rough usage and wear that may be expected of truly circular ones with a uniform thickness of chill.

For the successful casting of chill rolls the appliance should be such as to enable the chill d to remain constantly in intimate contact with the crust a, and that it be controllable likewise vertically to take care of the con-

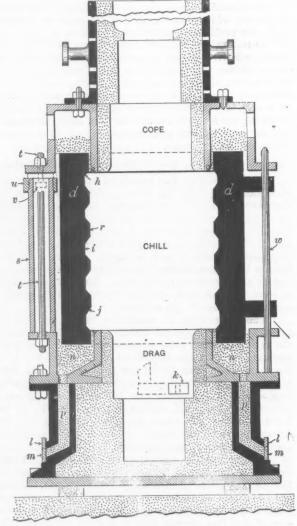


Fig. 3.—The Improved Chill and the Method by Which in Settling It Is Kept in Close Contact with the Roll Metal.

traction in that direction. Numerous devices designed to overcome the evil effects of a contracting crust have been tried, but none of these meet the requirements in anything like the same measure as the appliance represented in Fig. 3, which differs radically from anything previously attempted, and is the invention of the author's son, Ralph H. West, who has had considerable experience in the manufacture of chill rolls,

In the use of this device the action of the contracting

^{*}Read before the American Society for Testing Materials, Atlantic City Meeting, June, 1908.

crust was demonstrated in a way never done before, and it serves to show what may be accomplished to insure a truly circular roll casting of uniform thickness of chill. To make this clear a detailed description of the operation will first be presented.

The chill d, Fig. 3, has grooves, i, which are shown in an exaggerated form in the illustration. These grooves vary in hight and number to suit varying requirements, and exhibit gradual variations from bottom to top in the inclination of the sloping surfaces h and j for the purpose of taking care of the vertical contraction of the solidifying crust. This serves to insure a close contact between the upper slope of every groove and the corresponding bead cast on the chill roll during the entire period of settlement to final rest, which is brought about in the following manner.

After the metal is poured through the swirl gate k the band l, operated by a lever not shown, is moved, which serves to bring holes in the band to positions opposite m, this action allowing fine sand and other flowable material to run out of the partitions n and p at any desired speed. The chill d is lowered by this action, causing the sloping surfaces h and j to remain in intimate contact with the upper sloping surfaces of the beads cast on the chilled surfaces of the roll.

In the first roll cast by this device the chill commenced to settle in about 2 min. after the pouring was finished, and in about 7 min. the grooved face r had slid over the bead face i, thus giving direct indication of the internal action of the contracting chill crust, a matter never before accomplished.

In this device the outer diameter at the points *i* is such that when the roll is cold enough to be removed from the chill it can be hoisted out of the latter, or the latter off the roll, as may be desired. The body of the sample roll cast in this chill was 11 in. in diameter and 14 in. long. When put in the lathe to be turned it was found to be perfectly round and of an exact thickness of chill at all points of its circumference.

Five other devices, differing in the form of the grooves and the method of insuring contact, have been designed. In one case the chill remains stationary while the cope, casting and drag can be lowered. In another the crust is depressed. In a third the cope and casting settle into the drag, while the chill remains stationary. In some of these devices the grooves, or hugging faces, are so arranged that they remain in constant contact with the beads on the roll until the latter is removed from the chill or its molds.

Roll turners claim that the extra labor in turning up chill rolls to remove the slight projections or beads cast on the rolls by this system is, on the average, much less expensive than that required to turn up smooth faced chill rolls that are not truly circular, manufactured by processes now in use in our chill roll foundries.

Returning to Fig. 3, the cope is supported from the drag independent of the chill by means of four wrought iron tubes s, bolts t, adjustable sleeves u and set screws v. Three or four long turned rods or pins, w, serve to center the chill and cope with the drag.

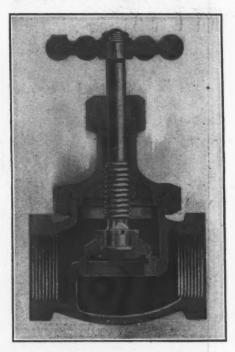
It is believed that with the above explanation those familiar with founding will readily understand the operation of the device and appreciate its utility. The system is expected to change greatly the present practice of casting chill rolls.

The Lunkenheimer Renewo Valve.

For those preferring a renewable seat regrinding valve the Lunkenheimer Company, Cincinnati, Ohio, has designed the valve shown in the sectional view herewith. This valve differs from the Lunkenheimer regrinding valve only in the construction of the disk and seat. The disk A is provided with a projecting ring, which enters the valve seat B. Its principal function is to preserve the seat. This it accomplishes by deflecting the current of steam from the seat ring face as it enters the cylindrical part of the seat, thus preventing the wire drawing which would otherwise occur, and would be serious if the valve was left partly open for any

length of time, and also by keeping the seating surface free from scale and grit by the action of the thin current of steam discharged over it as the disk is brought home. Another function of this ring is to prevent water hammer, which is caused by the sudden admission of steam; no matter how quickly the hand wheel may be operated the flange will only permit the steam to enter gradually.

The seat is renewable and can be removed from the valve body by using a flat bar to engage the lugs on the inside of the ring, but it may be reground a number of times before it is necessary to renew it. All of the other wearing parts, including the disk, can be renewed if necessary. The hub is securely held to the body by a union ring, owing to which it is impossible for the hub and the body to become corroded together, as the thread which holds the union to the body is protected from the action of the steam, the joint being made between the flange on the hub and the neck of the body. This connection also acts as a tie or binder in screwing over the body, and tends to strengthen the valve. The stuffing box can be repacked under pressure when the valve is



Section of the Renewo Valve Made by the Lunkenheimer Company, Cincinnati, Ohio.

wide open, as a shoulder on the stem, directly above the threads, forms a seat beneath the stuffing box. All valves above the ½-in. size have a gland follower in the stuffing box.

Lunkenheimer renewable seat valves are guaranteed to stand 200 lb. working pressure, and are made with both screw and flange ends. Up to 1½ in., inclusive, valves are regularly furnished with hexagon bonnet rings and above that size with round slotted rings, but either style of ring can be had for any size valve. English instead of American standard pipe threads and flanges are furnished when so ordered. The valves are also made with navy standard flanges, and brass hand wheels.

With the exception of the seat rings, Lunkenheimer Renewo valves are made entirely of high grade bronze, according to the formula specified by the United States Navy. The seat rings are made of hard, close grained nickel, and will permit of many regrindings. The regrinding is done by unscrewing the union ring C, taking the trimmings from the body, placing a little powdered sand or glass and soap or oil on the disk, inserting a wire or pin through the slot in the disk lock nut and hole in the stem, then replacing the trimmings in the valve body and regrinding, leaving the ring unscrewed, so that the hub rotates in the body and acts as a guide for the stem while regrinding.

The German Society of Engineers now has 22,430 members.

The Crane Company in the Pittsburgh District.

An industrial project, which at the present time is of special significance, is embraced in a decision reached by the Crane Company, Chicago, to establish another large manufacturing plant in the Central West. In pursuance of its plans to this end, a tract of 30 acres has just been purchased at Oakmont, a suburb of Pittsburgh, as a site for the new works. The Crane Company, which is capitalized at \$13,000,000, now operates plants in Chicago, employing a normal force of about 6000 men, and another at Bridgeport, Conn., employing 3000 men.

While the proposed plant at Oakmont will in the beginning hardly equal the Bridgeport plant, it is being laid out on a scale that will admit of extensive development, and will eventually be one of the most important constituencies of the present organization. Plans for build-

The Williams No. 2 Pipe Machine.

The improvement in the No. 2 pipe threading and cutting-off machine built by the Williams Tool Company, Erie, Pa., is principally in the method of drive. Changes of speed are obtained mechanically from a single-speed driving shaft, which may be driven by belt, as in the type illustrated in Fig. 1, or by motor, as in Fig. 2. A constant-speed motor is entirely sufficient, but a variable-speed motor may be used and a greater number of speeds be thereby obtained. The size of motor required is 2 hp. The drive is through machine cut gears under the headstock in the bed of the machine, where they are out of the way and are protected from dirt and chips. The changes in gear combinations are made by sliding gears; three changes are effected through the short lever at about the middle of the front of the bed, as seen in Fig. 1, and these three are doubled by the long vertical lever

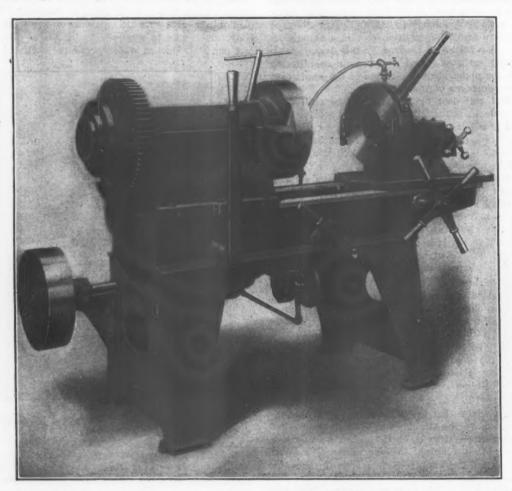


Fig. 1.—The Operating Side of the Belt-Driven No. 2 Pipe Threading and Cutting-off Machine Built by the Williams Tool Company, Erie, Pa.

ings and equipment are now in course of preparation, but are not far enough advanced to furnish detailed information; but it is stated that two structures, 100×120 ft. each, will comprise the initial buildings. The company is considering the use of gas engines for motive power, and because of the convenient available supply of gas in its immediate vicinity some type of gas engine will probably be selected. Preliminary work of survey and preparation for the construction of the plant will be begun at once, and it is designed to have the plant in operation within a year. Its product will consist of steam and water goods, including brass and iron valves, pipe fittings, and other specialties which comprise the line now manufactured by the company in the Chicago and Bridgeport plants.

The report that the Washington Coal & Coke Company, Pittsburgh, would start up its entire 1000 ovens in the Connellsville region is an exaggeration. It has been operating about 300 ovens and has recently started 150 more to take care of several orders for furnace coke recently received.

in front of the headstock. The central position of this lever is the neutral position where the drive is disengaged and the machine idle. Reversing for cutting left-hand threads is done outside of the machine; for the belt-driven machine the countershaft has two loose pulleys and an open and a crossed belt, and for the motor-driven machine a two-throw switch is provided to reverse the motor. The fact that shifting of belts or replacing of gears is unnecessary to the changing of speeds means a considerable saving of time and adds correspondingly to the output of the machine and the economy of operating.

Figs. 1 and 2 show not only the two manners of driving but the two sides of the machine, and indicate its simplicity of design. In it the company believes it has combined maximum strength, durability and efficiency with minimum cost, weight and number of parts. The equipment is calculated to contribute to easy operating and turning out accurate work rapidly and economically, and includes the following: Powerful self-centering universal gripping chuck, pipe self-centering scroll chuck, graduated die head with lever for instantly setting dies,

stop pin for duplicating threads on the same size of pipe, cutting-off tool, die-head scroll chuck for supporting pipe while being cut off, rotary oil pump connected to the die head and cut-off knife by flexible steel hose, and dies which are claimed to have excellent cutting and lasting qualities. For the No. 2 machine there are four sets of dies, each threading two sizes of pipe—1 and 1½; 1½ and 2; 2½ and 3, and 3½ and 4 in. The dies are easily reground and can be several times, thus reducing the die expense.

The frame is strong and rigid and has broad ways for the sliding carriage. The headstock is bolted to the bed and doweled to prevent its getting out of line. The No. 2 machine weighs 3000 lb. and requires a floor space of 2½ by 6 ft. As additional equipment it can be suupplied with one extra set of dies for threading ½ and ¾ in. pipe, a nipple holder for threading short nipples, bolt dies for threading ¾ to 3 in. bolts by using the nipple holder, and a nut-gripping chuck and taps for tapping

A New Method of Quenching Coke.

To overcome the drawback of too much water in connection with the ordinary method of quenching coke, a process has been invented by Charles E. Arnold. After being removed from the ovens the coke is forced by the use of a ram into a cooling chamber. It is said that the air admitted to this chamber with the coke soon loses its oxygen and becomes inert, and there is admitted into the chamber carbon dioxide and nitrogen, which take up the heat from the coke. These inert gases are then drawn to an adjacent chamber containing coils in which cooling water circulates. After giving up their heat the gases are again forced into the chamber containing the coke, and this process is repeated until the coke is brought down to a temperature below the igniting point so that it can be removed to the air. It is claimed that coke treated in this way is harder than that quenched in

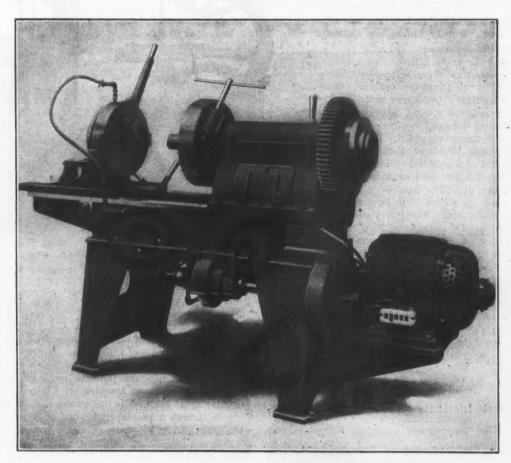


Fig. 2.—The Reverse Side of a No. 2 Williams Pipe Machine Equipped with Constant Speed Motor Drive.

nuts. The company also builds five other sizes of the same type of machine—No. 1 having a capacity of from ¼ to 2 in.; No. 1½, capacity ½ to 3 in.; No. 3, capacity 1½ to 6 in.; No. 4, capacity 2½ to 8 in., and No. 5, capacity 3½ to 12 in.

The Cape Girardeau Smelting & Mfg. Company.-The unfinished plant of the Southern Metal & Mfg. Company, at Cape Girardeau, Mo., has been purchased by the Cape Girardeau Smelting & Mfg. Company. The latter company was recently incorporated with a capital of \$150,000, \$65,000 of which is represented by the value of the plant. The remainder of the stock is to be held by a trustee, and proceeds from its sale are to be used to complete and operate the property. It is the purpose of the new company to get in shape to smelt lead ore and make lead pipe at the earliest possible date. Adequate transportation facilities are supplied by connections with the 'Frisco and Iron Mountain railroads and the Mississippi River, on the bank of which the plant is located. The officers of the company are as follows: H. M. Leonard, St, Louis, president; D. A. Glenn, Cape Girardeau, Mo., vice-president; J. H. Himmelberger, Cape Girardeau, treasurer; T. M. Williams, Cape Girardeau, secretary.

the ordinary way, in addition to being delivered practically dry to the blast furnace. Data as to the expense of the process are not given.

The Southern Steel Company's Reorganization.—
The plan and agreement of reorganization of the Southern Steel Company, dated May 15, having been approved by all the depositing first mortgage bondholders and collateral trust noteholders and by creditors to a majority in amount of all the claims filed, proved and allowed in the bankruptcy proceedings and by stockholders to a large amount, the Reorganization Committee, J. T. Woodward, chairman, in order that all security holders and creditors may become parties to the plan, has announced an extension of the time for the making of deposits thereunder to July 1, after which further deposits will be received only subject to such terms and conditions as the committee may see fit to impose.

From all countries the number of immigrants for May this year was 36,317, as compared with 184,886 in the corresponding month of last year and 150,927 the year before. The falling off, as compared with 1907, was 80 per cent.

The Silver Improved 29-Inch Band Saw.

Illustrations are herewith given of an improved band saw brought out by the Silver Mfg. Company, Salem, Ohio. Fig. 1 shows the machine arranged for foot power exclusively. Fig. 2 shows it as a combined machine, arranged for either foot or belt power.

The table of this saw is made of iron, planed perfectly smooth, and capable of being tilted for angle sawing up to 45 degrees by loosening a nut with an attached lever.

It can be firmly locked where desired. The entire frame is in one piece, cored out. It is heavy but symmetrical, the base resting on the floor all round, insuring solidity and cleanliness. The operator can conveniently control the upper wheel adjustment, the saw guide, the tension of the saw blade and the tilting of the table without changing his position at the saw. The wheels are turned true and perfectly balanced. Rubber bands are securely cemented to the rims.

The foot power mechanism on this machine is a novel as well as valuable feature. It is completely different from the ordinary dead center construction. Ordinary foot treadle machines can only be started in certain positions because of the dead centers at the top and bottom of the drive wheel. Each downward stroke then requires enough power to drive the wheel a complete revolution. Even when two treadles are used alternately, dead centers still prevail. The new mechanism of the Silver machine allows it to be started in any position whatever. The heavy strap attached to the treadle is fastened to a ratchet pulley. As soon as the pressure of the stroke is relieved the ratchet automatically winds up, raising the foot lever with it. The ratchet will engage anywhere, permitting any length of stroke up to 15 in. There is consequently

no dead center. Exactly the same amount of power is generated from the beginning to the end of the stroke. During a single downward tread the saw blade travels about 8 ft., and the power and speed that can be attained are very great. No alteration is necessary in changing the combined machine from belt to foot power and vice versa.

The American Institute of Chemical Engineers.

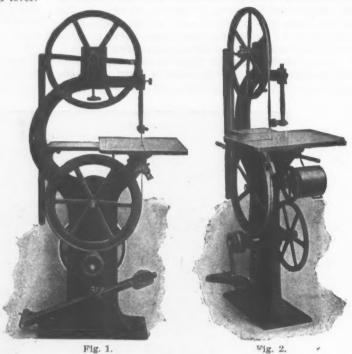
The American Institute of Chemical Engineers was formed under most auspicious circumstances at a meeting held at the Engineers' Club, Philadelphia, June 22. The meeting convened at the call of a committee, which for some time had in charge the formation of such an organization, and was responded to by 35 eminent engineers from different sections of the country.

The morning session opened at 10.30 o'clock, Dr. Samuel P. Sadtler of Philadelphia welcoming those in attendance to this city, which he said had large establishments of interest to the chemical engineer. He was heartly in sympathy with the organization of a society such as was proposed and believed that much of interest and benefit to the profession would result. Temporary organization was proceeded with, Dr. Charles F. McKenna, New York, being elected temporary chairman, and David W. Horn, Philadelphia, temporary secretary.

W. M. Booth, secretary of the Committee on Formation of the Institute, made a brief report, stating that several meetings of the committee had been held; that all phases of the formation of a society of chemical engineers had been gone into; those both in favor of and opposed to the movement had been heard; circulars had been sent to chemical engineers in all parts of the United States asking for their approval of the committee's plans, and the large majority of replies favored such an organization, the result of which was the call by the committee for the organization meeting.

A Committee on Credentials examined the qualifica-

tions for membership of those present, and while this committee was preparing its report Dr. McKenna made an able address on "The Justification of the Institute of Chemical Engineers." Following Dr. McKenna's address, committees were appointed to prepare a constitution and by-laws, to nominate officers, and to consider the question of finances in connection with the preliminary work of the Committee on Organization. Dr. H. A. Hunicke, St. Louis, Mo., made a brief address in which he stated that he heartily approved of the ex-



Improved 20-In. Band Saw Manufactured by the Silver Mfg. Company, Salem, Ohio.

pressions on the part of Dr. McKenna regarding the justification of the formation of the organization.

At the afternoon session Dr. J. C. Olsen, chairman of the Committee on By-laws, presented and read the proposed constitution, which was afterward taken up by articles, and with sundry corrections was unanimously adopted. It provides that the name of the organization be the American Institute of Chemical Engineers. Membership is confined to one grade, that of active members (although a provision for honorary membership is also made) over 30 years of age. Any graduate from an approved college or university, having a regular four years' technical course and having had six years' experience in practical chemical engineering, is declared eligible for membership, provided they have expert knowledge in some one branch of applied chemistry. The initiation fee and yearly dues for membership are fixed at \$15 each. The initiation fee will be omitted until the membership reaches a total of 200.

Officers as follows were elected to serve until the next meeting of the institute, which was to be considered the annual one, and which would probably be held in December: President, Dr. Samuel P. Sadtler, Philadelphia; first vice-president, Dr. Charles F. McKenna, New York; second vice-president, Dr. H. A. Hunicke, St. Louis; third vice-president, E. F. Atcheson, Niagara Falls, N. Y.; treasurer, Wm. M. Booth, Syracuse, N. Y.; secretary, Dr. C. F. Olsen, Brooklyn, N. Y.; auditor, R. K. Meade, Nazareth, Pa. Directors elected for one year: Ludwig Reuter, Berkeley, Cal.; Thomas Smith, Isabella, Tenn.; H. F. Brown, Wilmington, Del. Directors elected for two years: Eugene Haanel, Ottawa, Canada; J. M. Camp, Duquesne, Pa.; C. A. Catlin, Providence, R. I. Directors elected for three years: G. P. Adamson, Easton, Pa.; David Wessen, Montclair, N. J.; E. F. Guverman, Chicago, Ill. These officers collectively form the Administrative Council.

The standing committees, comprising the Financial, Membership, Meetings, Publication, Library and House committees, will be appointed later by the president.

Iron Making North and South Contrasted.

Under the above caption the *Manufacturers' Record* of June 18 publishes a communication from Joseph G. Butler, Jr., Youngstown, Ohio, from which we take the following:

I realize more than ever the difficulty in managing the Southern properties as compared with the Northern properties. For instance, in the North our ores are mined by one set of men; the people who run the furnaces have absolutely nothing to do with the mining of the ore except incidentally; the care and burden of this are done by an entirely separate organization. The properties are stripped, the ores are mined, sorted if necessary, hauled to the Lake Erie ports, and then another set of men take hold with the boats; the samples are made and the ore is delivered down at the Lake Erie ports. Then it is taken hold of by another set of people, either docked or placed on the cars, resampled, shipped to the furnaces, and there our work begins. Our limestone is quarried for us, handled by the railroads, crushed and delivered to the furnaces in perfect condition for use. Our coke is made for us in the Connellsville region and elsewhere, the coal being mined and the coke made by another organization. It is then delivered to the different lines of railroads and shipped to our furnaces, and we have nothing to do with it but to unload it and use it up.

Now, per contra, in the South all this burden of mining and shipping the ore, mining the coal and making it into coke, quarrying the limestone and delivering it to the furnace, and, to a very great extent, the management of the railroads, is done by one single, effective management. It is therefore my judgment that even a higher grade of talent is required in the South than in the North. It is also quite apparent that the management in the South has, since 1890, gradually improved in every respect, and there is still room for improvement in the matter of preparing the ore and the coke. The quantity of ore in the South is, of course, largely a matter of computation, and I have no doubt the figures given me are correct. It is simply fabulous.

The increased use of the basic process is going to be a very great help to the South. Bessemer ores are getting scarcer and the use of the basic process is widening both North and South. The time is coming when a great deal of the pig iron shipped North will be manufactured at home into various different forms. This, I think, will be first taken in hand by the Tennessee Coal, Iron & Railroad Company. I believe it is the intention of the United States Steel Corporation to build additional finishing plants in the South.

The South at present has the advantage in the matter of lower costs than the North in the making of foundry iron. This, however, is largely a matter of bookkeeping. The ore and coke and limestone and nominal transportation charges are all bulked together and the cost arrived at in that way, while in the North the furnace is charged with the ore at the market price, with the coke at the market price and with the limestone at the market price, each of these items giving to the producer a return for the investment. If Northern costs were figured in the same way as Southern, the difference would be found not to be so great.

It is a matter of surprise to me that Southern producers would think of selling their product as low as has been done during the past few months.

There is under consideration at the present time a statistical bureau for the entire pig iron interests of the United States. I am quite sure that if the Southern producers will join heartily in this movement it will be very much to their advantage, as well as to the advantage of their brother producers in the East and North. The committee who had the matter of forming this bureau of statistics in hand decided that to start it in a practical way the manufacturers should be asked to report to a commissioner.

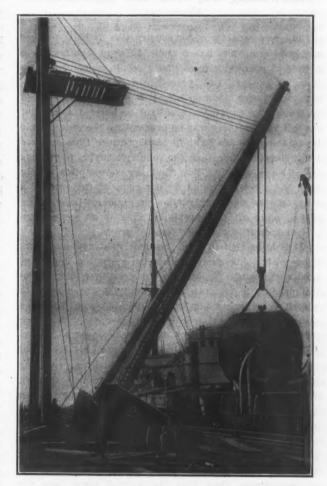
- In the first report to give the stock on hand in tons by grades, and subsequently—
 - 2. To report the weekly make in tons by grades.
 - 3. The weekly shipments in tons by grades.
 - 4. The weekly sales in tons by grades.

That the commissioner be instructed to tabulate the information received and to give the recapitulation each week only to those furnishing reports, and that a uniform blank be prepared and sent each member of the bureau, and that weekly reports be made at the close of business as of 6 o'clock p.m. each Saturday.

An Electric Dock Hoist.

The remarkable record which is credited to the electric hoist shown in the illustration is the handling of a 65-ton boiler from the dock to the hold of a steamship in twenty minutes. The illustration shows the boiler about to be placed in the hold. The hoist is in the yards of the Commercial Boiler Works, at Seattle, Wash., which manufactures marine boilers and executes ship repairs. The boiler was one of the largest ever built in Seattle. The worm gear hoist which was previously used would have required three hours' time to raise the same load.

The hoist proper was supplied by the Lambert Hoist-



An Electric Hoist on the Dock of the Commercial Boiler Works, Seattle, Wash., Loading a 65-Ton Boiler Into the Hold of a Vessel.

ing Engine Company, and is driven by a 40-hp. type K Westinghouse direct-current motor, controlled by a drum-type controller, affording nine forward and nine reverse speeds. From the drums of the hoist a \(^4\)-in, steel cable runs to the top of the shear legs, where it reeves through a set of blocks capable of lifting from 75 to 90 tons. A 15-ton boiler was recently loaded by the Lambert hoist in 4\(^4\)-min.

The power which drives the hoist and the motors in the shop, where the tools are individually driven, is purchased from the Seattle-Tacoma Power Company, and is transmitted by a two-phase line at 2300 volts. It is utilized on the dock as direct current and in the shops as alternating current for two 50 hp. motors driving heavy rolls, one 50 hp. motor driving an air compressor and various small motors, all of standard Westinghouse manufacture. A motor-generator set is installed in the shop to supply the necessary direct current for the hoist.

THE IRON AGE

Established in 1855.

New York, Thursday, June 25, 1908.

Entered at the New York Post Office, as Second Class Mail Matter,

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Steel-Making Pig Iron and the Merchant Furnaces.

The new capacity under construction by blast furnace and steel companies has a vast'y different significance in a time of prosperity from that given it under conditions like the present. Last year, before any signs of recession were found in actual industrial operations, it seemed as though the new plant could not be hurried along fast enough, though there was no overlooking the general rule that extensions are built in high pressure time and are ready for operation when the country's buying power has fallen away greatly. Now that the consumption of pig iron and steel is around 50 per cent. of the rate of a year ago the new construction programmes partly completed, some of them nearly so, give by no means auspicious indications of the future of prices.

It is to be kept in mind, however, that new blast furnaces such as the Steel Corporation and other important producers are now building do not mean that their potential product is so much more metal for the market to absorb, whether as pig iron or finished steel. It does mean that the total monthly output made when high point was reached last year could be increased to the extent of the monthly capacity of the new furnaces; but this would happen only under market conditions enabling the smaller furnaces now cold to make iron at a profit. What actually would happen in the early stages of an increasing consumption of pig iron is the starting up of some of these new furnaces, rather than of furnaces whose cost is at or above the present market level. Thus the building movement now under way means rather that some furnaces heretofore active will be a long time out of commission, than that the market must bear the weight of an enormous new output of pig iron, in addition to the maximum of last year, which was at a yearly rate of nearly 28,000,000 tons. The boom that took its departure last year, like every one of its predecessors, marked the last run of a number of furnace stacks and a long rest for many others.

While the Steel Corporation's new furnace construction will mean the idleness for many months of some of its smaller and less favorably located furnaces, as at Zanesville, Steubenville and Columbus, Ohio, they will likewise, in conjunction with the new furnace construction of other steel companies, as at Aliquippa, and that of the Youngstown Sheet & Tube Company, raise again the question of the future of the merchant furnace running on steel making iron. The Steel Corporation's eight building furnaces at Gary, the two at Duquesne and the two at Youngstown, together with those of the two so-called independent steel companies referred to, represent

a yearly output of nearly 3,000,000 tons of pig iron. As all the companies named were buyers of Bessemer iron from the merchant furnaces last year, it is perfectly plain that the latter must turn to other kinds of pig iron or await the coming of another boom. The elimination to so large an extent of Bessemer iron as a market factor in the Pittsburgh and Mahoning and Shenango Valley districts is not merely an incident of the present period of depression. It brings up again the old question of the future of the merchant furnaces, that for a period of years previous to the fall of 1907, not omitting the lean year 1904, when the Steel Corporation came to their rescue, made up the difference between the pig iron requirements of the large steel companies and the output of the connected blast furnaces.

The same question has come up so often and has so regularly been answered by an unlooked for expansion of the country's requirements, that it may seem like a hunt for trouble to raise it now. Not only have the steel companies been providing for the making in their own furnaces of metal heretofore supplied from outside, but they have gone much beyond this in blast furnaces, while the Steel Corporation has built and is now building new steel works that will carry its production of open hearth steel far in advance of the largest output it has ever made. The first view of the vast plant at Gary might be that as it is in a district heretofore self-contained as to steel making pig iron, it has no bearing on the status of the merchant furnaces. Yet, as Gary is to supply Western consumers of steel who have hitherto drawn upon the Pittsburgh District, its operations might be for a time at the expense of Pittsburgh works, and thus have a direct bearing on the Bessemer pig iron market in Ohio and western Pennsylvania.

If the steel companies are right in, the measure they have taken of the future—and history and reasonable expectation bear them out—there must also be an expansion in the foundry trade that will call for all the foundry and malleable Bessemer grades the temporarily displaced Bessemer and basic pig iron furnaces can produce and more. But so great an expansion in cast iron, like that looked for in steel, is not a matter of next month, nor of next year. Meantime the problem of profitable employment for a good many merchant furnaces may become acute.

The Development of Metal Drawing.

The development of the art of drawing and stamping metal has been exceedingly rapid of late. The press builders have kept pace with the fast increasing knowledge of the physical properties of the various metals, especially as to their flow. New steels have entered into the progress of the art, not only in the product itself, but also in the tools used in its working. One after another, obstacles have been overcome which had hitherto been considered insurmountable. The press designers are turning out machines to do work which had been supposed to be impossible of accomplishment. Precision work, involving the manufacturing of parts in which the limit of variations is a small fraction of a thousandth of an inch, is now being carried on commercially quite as a matter of course, with an enormous saving of time and money as compared with what had been practically hand work, and at the same time with a greater uniformity of product. In automatic press work marvels of manufacturing have been developed recently. An instance of drawn metal is the manufacture of very long slender tubes of various metals, closed at one end.

The field of pressed metal has been enlarging ever

since its beginning, which was not many years ago, but lately the growth seems to have been given a new impetus, doubtless because the knowledge of the various elements that enter into the art has been more nearly perfected. The efforts of research by many experts have been brought to fulfillment, furnishing more exact data as to details of the properties of metal, with important results in the design of the machines and tools with which it is worked. Beneath all is the basis of the experience of many practical men. The pressed metal people have always held that their branch of industry was only at the threshhold of its usefulness, and this would seem to be a better grounded prophesy to-day that ever before, because its foundation in fact is the more apparent.

The first drawn work was done to supply a demand for seamless parts to replace castings, which were too heavy and cumbersome for convenience or appearance. Ferrules for various purposes, stove knobs and a few other specialties were produced and sold at a great margin of profit, because even at very high prices as compared with their cost the expense to the purchaser was little if any more than under old methods, and the drawn metal was greatly superior for the purpose. From the small beginning the business progressed rapidly. The possibilities of its application were seen, and as time went on many manufacturers entered the field. Finally general manufacturing companies established departments for the manufacture of metal parts of their products, or the cans or metal boxes in which to pack them.

With competition came the spur to better and cheaper methods of production, and in this the press builders have played the most important part. The development has included greater power, greater speed of production, greater precision, automatic feeds, combinations of processes in one machine and special machines of wonderful ingenuity, with principles of design conforming to the knowledge gained by the experience of the pressed steel manufacturers and the investigations of their experts, and by the manufacturers of the metals which are used as tools and as raw materials for manufacture. The adaptation of the products has been so broad as to be revolutionary. There are few articles in which metal plays a part to which the press does not contribute its share, as a rule improving the quality and lessening the cost. Other branches of mechanics have entered into the work, especially important being the new welding processes, notably the electric and the oxy-acetylene, both of which produce results previously impossible, and consequently adding their important functions in developing the field.

There are instances of manufacturers or those who would be manufacturers who have abandoned ideas because the special machinery people in the past have been unable to give them the equipment with which to manufacture cheaply by automatic processes. To-day these machines could be furnished in many cases. Manufacturing has been simplified by the reduction of the number of operations necessary to accomplish a certain work, which constitutes a very important development in pressed metal working. The manufacturer who is equipped with the most modern tools can compete successfully at a satisfactory profit, for what to him is a sufficient price, would be below cost to a competitor less well equipped. Figuring is frequently very close indeed in this line, and as in many other branches of business, first-class machinery is necessary if money is to be made.

The trade literature of all the leading manufacturing countries exhibits some curiously common features. There is the same bitter complaint of the neglect and inefficiency of the consular service of the country, to which the writer belongs; the same abundant praise of the industry and intelligence of the Government agents of rival countries; the same dark hints at their going to any lengths to serve patriotic ends; the same savage denunciation of absurd methods, and the same tearful pleas for reform. The English, German and French globe drummers and commercial exiles all sing the same song, until one reaches the conclusion that they all exaggerate alike and that all are eager to have the home government do as much of their work for them as it can be made to do by threats or cajolery.

Replacing Old Tools with New Ones.

One of the important duties of the salesman who handles shop and factory equipment lies in the education of customers in his effort to sell them new tools to replace those that are less efficient. With the rapid progress in the design of machinery of all classes, there are few manufacturing establishments presenting no chance for an argument along these lines. But the greatest opportunity lies in some of the older works. It is almost an anomalous condition that an occasional plant makes money in spite of the fact that its machinery is far from modern and its cost of manufacturing is necessarily much higher than it would be were the same work done under advanced methods. Such a condition may be capable of explanation. The reputation of the goods, long experience and resultant excellence of design, which may put a product in a class by itself; the skill of the sales department-any combination of these and other factors may serve to overcome disadvantages at the manufacturing end of the business. But the observer cannot fail to see how much more profitable a business would be, with all other elements as advantageous as before, if old equipment, which in many instances may be classed as obsolete, should be replaced by the best that modern mechanical art has evolved for the various required purposes. Almost always, these cases occur where the business is an old one, directed by the same influences that have controlled it for many years, and housed in old buildings. The experience of such a management is a large item of value in itself, as an offset to the failure to make improvements. A new management that would modernize the works would perhaps lack other valuable qualities begot by long acquaintance with the product and its market. It becomes almost an ideal condition when a veteran management establishes new works, with new machinery, cheaper power, cheaper insurance because of lessened fire risk, better light and sanitary surroundings; a change that comes usually after a serious fire.

The salesman often sees the oportunity for a large order in looking about an old but prosperous shop or factory, and undertakes the education of those in control in the effort to sell new machinery. It is frequently true that a new machine will pay for itself in a short time by the saving in cost of production as compared with the tool which it supersedes. To establish this fact to the point of an order is one of the difficult experiences in selling machinery. The owner is apt to fight shy of changes. But it is well worth the while to keep up the effort, for to the conservative management that has finally made a start on a policy of improved equipment the advantages in money saved become too apparent to be passed by, and more or less quickly the modernizing of the plant will be carried out, or new works erected.

This is especially true where the manufacturer has a cost system sufficiently exact to give him the precise figures of his saving. There is no doubt that the cost system is one of the most important factors in bringing

about radical improvements in manufacturing methods, and those who are benefited in the market by such changes could do less important missionary work than to equip themselves to be able to point out intelligently improved systems of ascertaining costs of a product in its various operations. If by installing a sample machine it can be demonstrated that the cost of an operation can be reduced one-half or three-quarters or even more, then few successful business men, even if they are not easily converted to the progressive ideas of the present day, must be strongly influenced. It is not the whole story to show that a machine will perform a certain operation on twice as many parts in a given time as did the older tool. The demonstration of costs should go beyond this; the elements of the item of labor and of the various factors that enter into general expenses should all be figured in the comparison, to emphasize the economy effected. The education of customers is a common enough practice, but we believe it is seldom accompanied by the effort to place a parallel of exact costs, the most convincing argument of all. Where it is possible to instal a machine on trial, a plan more feasible, of course, with light than with heavy tools, much good is accomplished providing the builder of the tool can back up his claims with results. It is also possible to get from some manufacturer, who has had the experience of the change to the new type of tool under similar conditions, abstracts from his cost system showing exactly the difference in manufacturing expense that resulted.

The United States Steel Corporation is not the dictator of prices in the steel trade. It has at no time since its organization fixed a price for others to sell by nor absolutely determined on its own volition the course of the market. It is true that the policy of the corporation has impressed itself on the trade, but only through the willingness of other manufacturers to co-operate along the lines suggested. This statement is made because a wide misunderstanding seems to prevail regarding the action on steel prices since the panic of last fall. References made to this matter in the daily press, in trade communications and in conversation among members of the trade have so frequently ascribed the maintenance of prices or a change in prices to the United States Steel Corporation as to make it appear that it had either assumed or was intrusted with the management of the entire steel trade of the country. This assumption is certainly not flattering to the 50 or more representatives of other companies who have had much to do with the direction of affairs in the steel trade not only since the panic but ever since the organization of the United States Steel

A. M. Byers & Co., Inc., Pittsburgh, owners of Mattle Furnace at Girard, Ohio, have recently bought 40 acres of ground adjacent to the furnace, on which they will build a puddling plant to contain 40 puddling furnaces and a skelp mill to contain a 16-in. roughing stand and a 12-in. finishing stand. It is the intention of the firm to manufacture skelp for use in its pipe mills in Pittsburgh. Press reports that the firm would abandon those mills are absolutely untrue. They will continue to be operated, and there is no intention of removing or dismantling them.

The Department of Health of New York City estimates that the population of Greater New York July 1 will be 4,422,685. At Chicago, estimates made by those in charge of the school census indicate a present population for that city of about 2,140,000. The total reported in 1901 when the last general school census was taken was 1,704,044.

The Niles Iron & Steel Company's Improvements.

The Niles Iron & Steel Company, Niles, Ohio, manufacturer of sheet iron, sheet steel and corrugated roofing, has under construction large additions to its plant which will enable the company to increase the output of its present products and to add new lines. Its new products will include eaves trough and conductor pipe, pressed steel seats, cultivator shields and other steel stamping pieces for agricultural implements, washers, weigh boxes, &c. The company is erecting one large one-story building of steel construction, 74 x 260 ft., one half of which will be used for the stamping department and the other half for the eaves trough and conductor pipe department. A 400-hp. Corliss engine has been installed in this building. Other equipment will include two hammers and four drawing presses, a conductor pipe machine and a ridge roll machine, which have been bought, and two power squaring shears. The company is now in the market for the shears, as well as for shafting and hangers. A new eaves trough, conductor pipe and seat department has been created, with R. G. Hird in charge. The strong selling point will be made that conductor pipe will be sold only to the large jobbers. The company will also make its own crates, and is in the market for a rip saw and a swinging cross cut saw.

In the rolling mill a new 2500-hp. Corliss engine, with rope drive, will be installed. A new building is being erected for a machine shop. This will also contain two generators and other electrical equipment and two smaller engines. An addition is being made to the galvanizing department, where two new galvanizing pots will be installed, bringing the capacity up to 4000 tons per month. With the completion of the additions and improvements the capacity of the rolling mill will be increased to about 5000 tons per month. The company is spending about \$100,000 in the additions and improvements, with the intention of making the plant one of the best of its kind in the country. It is expected that the improvements will be completed by August 1. The officers of the company are W. A. Thomas, president; C. G. Thomas, vice-president and treasurer, and C. R. Thomas, secretary.

A Book on Rolls and Rollmaking.

The United Engineering & Foundry Company, Pittsburgh, Pa., has issued a handsomely illustrated and beautifully printed book of 40 pages which treats exclusively of rolls. The book bears the title, "Largest Roll Makers in the World—Makers of the Largest Rolls." The company operates three of its six foundries on rolls. These are the Lloyd Booth Company Department, Oak street plant, Youngstown, Ohio; Lincoln Foundry Company Department, Pittsburgh, Pa.; Chilled Roll Foundry Company Department, Vandergrift, Pa. Views are given of each of these establishments.

A chapter is appropriately devoted to the requirements imposed on manufacturers of rolls and the methods which have been adopted by scientific and practical roll makers to meet these requirements. The process of modern roll founding is described, from the production of cold blast pig iron in the blast furnace to the methods of completing molds in the foundry. Separate chapters are assigned to chilled rolls, sand rolls and steel rolls. The methods of manufacturing each of these kinds of rolls are described, and the users of rolls are informed regarding the special adaptability of each.

The company dwells with pardonable pride on its metallurgical system, its roll mixtures at each of its shops being made up to its own chemical specifications by metallurgists who have acquired their training at the laboratory at the Lincoln Foundry Company Department, Pittsburgh. At this laboratory all the company's principal research work is done, and well qualified metallurgists are constantly experimenting to improve further the quality of the product. This publication is by no means the conventional catalogue, but is laid out on original lines which cannot fall to interest the users of rolls.

UNIFORM FOUNDRY COSTS.

A Chart Showing the Distribution of Labor, Materials and Burden.

At the Toronto meeting of the American Foundrymen's Association, June 8-12, a report was made by the association's Committee on Costs, Kenneth Falconer chairman, which also submitted a chart outlining the main divisions of foundry costs. We present extracts from the report below, accompanying them with a reproduction of the chart:

The Jobbing Founders' Association having appointed a committee to work along similar lines, it was deemed advisable that the committees of the two associations should work together. In the past year several joint meetings of these committees were held—J. S. Stirling, of the Hilles & Jones Company, representing the Jobbing Founders' Association, and the American Foundrymen's Association being represented by Dr. Moldenke, Harrington Emerson, E. M. Taylor and Kenneth Falconer. Under date of November 27, 1907, Mr. Stirling submitted to his association a report on "Uniform Cost Methods for Jobbing Foundries," which we understand has been approved, and largely adopted by members of that association.

Your committee recognizes that it is impossible to lay down hard and fast rules regarding details of figuring costs, making estimates and basing bids, but at the same time it feels that the best interest of the foundry business demands some degree of uniformity in the basic principles on which costs are figured. With this idea in mind the preparation of a chart outlining the main divisions of costs was delegated to Harrington Emerson, and the chart as prepared by Mr. Emerson is attached hereto. Your committee desires it understood that it only endorses this chart for general use so far as main divisions are concerned, leaving details to be arranged in each instance according to the requirements of individual plants. The final decision of the two committees was that to secure the best possible results certain clear-cut lines should be drawn, defining cost of product up to and including certain processes; but that further analysis of such costs should be left in each instance to the individual judgment of those in charge of the plants.

In view of the fact that in the majority of cases it is commercially impracticable to obtain a record of the cost of individual castings, the accompanying chart was designed with the idea of dividing the foundry output into classes, the number of which would depend on conditions and circumstances. In the chart the output is divided by Mr. Emerson into approximately ten classes. The actual cost of the foundry output has been divided, as will be seen by reference to the chart, into the following main divisions:

- 1. Metal.
- 2. Direct labor.
- 3. Indirect expenses chargeable on basis of weight of output.
- 4. Indirect expenses chargeable as a percentage of direct labor.

If those competing in the foundry industry for orders would base their figures on some such classification, subdivided to such detail as may be found advisable in individual cases, the result would be of benefit to the entire trade, and would tend to eliminate the reckless competition which is largely responsible for the present unsatisfactory condition of the foundry business.

Comment on the Committee's Report.

Ellsworth M. Taylor, New York, a member of the Committee on Costs, presented at the Toronto meeting more extended data and more detailed information as to the method of applying the cost system. His paper is as follows:

The chart submitted by the committee has been made as simple as possible, and is designed to illustrate merely the elementary principles of the burden of surcharge distributions agreed upon as the standard units to be used by all foundrymen. It is not intended to be a complete cost system in itself, nor should the arrangement

of the items in the different sections necessarily be maintained, so long as the various kinds of labor and material are distributed to individual costs in accordance with the formula shown. Briefly stated it has been determined that, in order to correctly obtain the cost per pound of good castings, according to classes or individual patterns, after the cost of the metal and direct or applied labor has been ascertained, certain kinds of burden or surcharge labor and materials must be distributed to each class into which the product may be divided in two general ways:

- 1. According to weight of good castings.
- According to a percentage of the direct or applied labor used in producing each class.

In order to get a clearer insight into the subject let us discuss the various sections of the chart in the order in which they occur. We will then take up in a general way the application of the principles to different kinds of foundries.

Metal.

This section of the chart requires little explanation. It is simply necessary for the foundryman to make up his report showing the cost of the metal actually consumed in the making of the good castings produced. This means a fairly close check on what goes into the cupola, and what we ultimately get out of it.

Distribution of Burden or Surcharges on Metal.

This section of the chart shows in a general way the kinds of labor and materials which will be distributed to classes or individual patterns in accordance with the weight of good castings into which the product may be divided. In studying the items named in this section of the chart it should be remembered that the arrangement is perfectly elastic, and may be modified and enlarged upon according to the individual requirements and desires of each foundryman. The examples given are merely to illustrate the kinds of labor and materials which are to be included in this section.

It is suggested, however, that in arranging the items in this section the foundrymen group together those expenditures which relate to the successive steps through which the metal passes from the pig up to the finished castings. For example:

- 1. Cost of metals delivered at yard.
- 2. Cost of materials and all expenditures to cupola.
- 3. Cost of materials and labor to cover molten iron in ladle.
- 4. Cost of molding supplies and all items incidental to the same.
- Cost of all general and miscellaneous items which must be distributed into the costs on a basis of weight of good castings.

The total cost of these items when divided by the weight of the good castings gives the number of cents per pound of burden or sur-charge cost to be apportioned to each class of castings or individual patterns into which the production may be divided. The grouping of the items in this way is to enable the foundryman to analyze his costs logically and make comparisons for the purpose of detecting excessive expenditures. It is sometimes the wish of the foundryman to group these and other items so as to put the responsibility for the economical handling of the iron in the various stages up to certain foremen or individuals. All of these matters, however, must be decided according to individual desires and conditions.

Direct or Applied Labor.

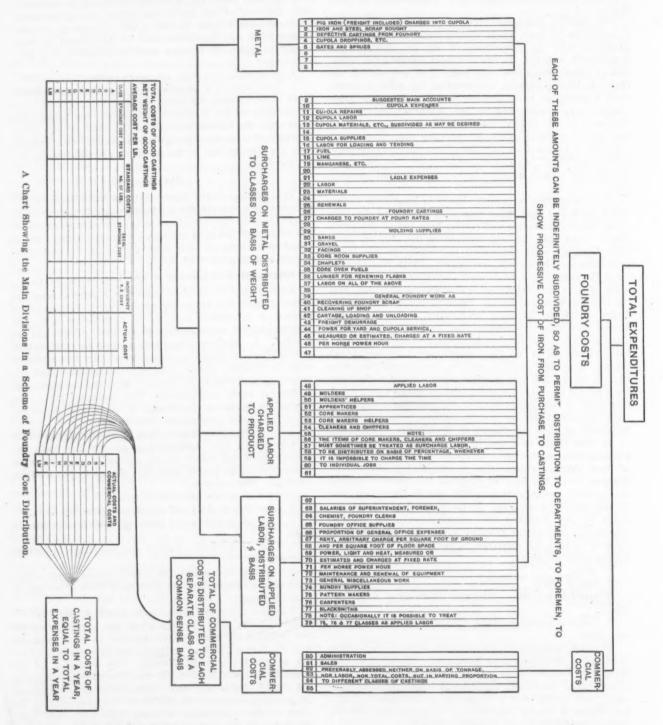
The subdivisions in this section are merely suggestive. The list must be added to or decreased to meet conditions. As stated in the note, it is not always possible to class all of the labor of these employees as direct or applied labor, and likewise it is sometimes possible to class all or part of the labor of pattern makers, carpenters and blacksmiths as applied or direct labor. The rule is that all labor is direct or applied when capa-

ble of direct distribution to any class of castings or individual patterns, and when it would be included as a direct labor charge in making up the cost of an individual job. Otherwise the labor items must be classed as burden or sur-charge cost.

The foundryman should be careful to observe this rule when figuring detail costs, as the percentage of burden or sur-charge apportioned to individual costs on a basis of direct or applied labor is obtained by dividing the total cost of the section "Surcharge on Applied

the selling department. The balance of the administrative cost should be included in item 66, "Proportion of General Office Expense," or may be made a separate subdivision thereof. Item 81 of the chart, "Sales Costs," may be subdivided as each foundryman desires; for example, salesmen's salaries, salesmen's commissions, traveling expense, etc.

In apportioning the commercial cost to the classes into which the product may be divided the unit of distribution should be made up on a basis of equity, taking into



Labor Distributed on Per Cent. Basis" by the total of the "Applied Labor" section.

Therefore, if we include in the applied labor section any considerable amount of labor which does not come within the above named definition of direct labor, we are apt to develop a percentage rate which will not cover our real burden or sur-charge.

Commercial Costs.

This section is intended to cover all costs beyond the shipping office door which have to do with the selling of the product. Consequently item 80 of the chart, "Administration," should be understood to mean only that portion of the executive cost which is used for the benefit of

consideration the real conditions governing the sale of each class, such as the amount of sales, the costs up to the "Commercial Costs" section, the difficulty in making sales, the volume of advertising, etc.

Individual conditions must be carefully studied before the unit of distribution for this class of costs is adopted.

Summary of Costs.

After completing the arrangement of the sections described above we are in a position to secure a summary of costs which may be drawn up as submitted below, changing the arrangement to meet individual conditions. The grand summary will be based on the following data:

1. Total good castings produced.

- 2. Cost of metals used.
- 3. Cost of applied labor.
- 4. Cost of total surcharge divided into (a) cost of items to be distributed as "sur-charges or burden on metal distributed on basis of weight of good castings." (b) Cost of items to be distributed as "surcharges or burden on basis of per cent. of applied or direct labor."
 - 5. Total cost of output.
 - 6. Commercial costs.
 - 7. Gross cost of output.
- 8. Net cost of metals used per pound of good castings (obtained by dividing item 2 by item 1).
- 9. Burden or sur-charge to be distributed to individual costs on a basis of per pound of good castings (obtained by dividing item 4a by item 1).
- 10. Burden or sur-charge to be distributed to individual costs on a basis of per cent, of direct or applied labor (obtained by dividing item 4b by item 3).

The examples given in this schedule illustrate the classification of costs necessary for all kinds of foundries, and must be used to meet the conditions in the five general classes of foundries described below, and all others.

The Small Jobbing Foundry Selling Its Entire Product to the Trade.

This foundry wants to know:

- a. What is the gross cost of production? See items 5 and 7.
- b. How should we figure the cost of an individual casting? Multiply the weight of casting by item 8. Get the cost of the direct or applied labor used to produce the casting. Multiply the weight of casting by item 9. Multiply the direct labor by the percentage rate obtained by item 10. The total of these amounts is the cost of the casting up to the shipping office door. Add the proper proportion of item 6. The total is the gross cost of the casting.
- c. Suppose it is desired to divide the production into two or more classes, say, for example, "heavy work" and "light work," so that you may obtain the average cost of these classes without getting the detail cost of each casting? Separate item 1 into "heavy work" and "light work." Keep a record of amount of item 3 used for each class. Then proceed exactly as outlined for b.
- d. Suppose it is desired to secure the cost of Smith's work, Jones' work, and Brown's work to find out which is the most profitable, and without getting the detail cost of each casting? Separate item 1 according to customers. Keep a record of amount of item 3 used for each customer. Then proceed exactly as outlined for b.

The Jobbing Foundry Having Two or More Departments.

e. Suppose one section of a plant is continually producing large loam castings, and another section produces machine made castings. Treat each department as a separate business proposition. This means:

Separate item 1 according to departments. Separate item 3 according to departments. Separate item 4a according to departments. Subdivide 4a: 1, according to those expenditures capable of direct charge to each department; 2, according to those expenditures incapable of direct charge to each department.

Examine carefully all of the items in the second subdivision of 4a, take into consideration all of the conditions prevailing in each department and apportion the amounts in accordance with the units of equity which the examination develops.

Separate item 4b according to departments: 1, according to those expenditures capable of direct charge to each department; 2, according to those expenditures incapable of direct charge to each department.

Examine carefully all of the items in the second subdivision of 4b, take into consideration all of the conditions prevailing in each department and apportion the amounts in accordance with the units of equity which the examination develops.

Separate item 6 according to departments: 1, according to those expenditures capable of direct charge to the sale of castings from each department; 2, according to those expenditures incapable of direct charge to each department.

Examine carefully the items in the second subdivision of 6 and distribute the amounts in accordance with the general instructions given under the heading "Commercial Costs."

When the above distributions have been made we will find ourselves in possession of two sets of reports. Then proceed exactly as outlined for b in order to obtain any detail information.

The Foundry Selling Its Entire Product to Its Own Machine Shop.

With this class of foundry the first step is to treat the two properties as separate institutions. Draw the line sharply between expenditures made for each property, and consider the foundry as an outside concern. the selling prices of the castings to the machine shop, taking into consideration general market conditions, and the fact that the foundry will be relieved of the usual commercial or selling expense. The foundry must then operate within these theoretical selling prices in order to be profitable. The next thing to consider is whether the foundry is large enough to warrant subdividing it into departments. If it is not necessary to make these departmental subdivisions we will obtain our costs and detail in the same general manner as outlined for a and b. If a departmental subdivision into departments is advisable for any reason proceed in the manner outlined for e.

The Small Foundry Selling Hoth to the Trade and to Its Own Machine Shop,

This class of foundry may be handled in several ways, the suggested division of the production being:

- Cost and profits on castings sold to outside customers.
- 2. Cost and profits on castings sold to machine shop. To get this information proceed as outlined for d, being careful to apportion the commercial or selling costs as between the two divisions of the product. If we wish to obtain detail costs proceed as outlined for b and by posting these costs against sales we may get profits on individual jobs or by any class desired.

If we desire to divide our product first into perhaps "heavy work" and "light work" without going into the detail cost of each job, proceed as outlined for c. And if it is still our wish to secure figures in the broad divisions of "Costs and profits on castings to 'outside customers'" and "Costs and profits on castings to machine shop," we must divide 1 and 2 into the pounds of "heavy work" and "light work" in each class, and multiply the amounts by cost as developed by c. If we further wish to subdivide costs of "work for outside customers," by customers, such as Brown's work, Jones' work, &c., we must know the pounds of "heavy work" and "light work" produced for eaca. Then multiply the amounts by the cost developed by c.

The Large Foundry Selling Both to the Trade and to Its Own Machine Shop.

This class of foundry has the greatest complications and likewise the greatest possibilities for the application of the principles enumerated, and as its costs will be determined primarily by a combination of the illustrations given it does not seem necessary to go into much description. A careful reading of the outline for ε and for "The Small Foundry Selling Both to the Trade and to Its Own Machine Shop" should give a clear idea of points to be covered.

In General.

In reading this paper it should be borne in mind that the intention is to illustrate correct principles of distribution and not to outline a complete cost system. No attempt is being made to deal with the subject of handling of patterns, the handling of orders, the handling of metals, the record of stock, the books of account, statistics, &c. All of these matters come under the heading of a cost system, and they were treated of in a general way by the writer in the paper prepared for the convention of the American Foundrymen's Association held in New York City in June, 1905.

The Carbon Steel Company, Pittsburgh, manufacturer of plates, locomotive driving axles, pins and rods, is operating its plant to about 60 per cent. of capacity.

The Steel Rail Situation.

Dr. Charles B. Dudley's Address Before the American Society for Testing Materials.

The presidential addresses of Dr. Charles B. Dudley, chemist of the Pennsylvania Railroad, before the American Society for Testing Materials, have been notable features of the annual meetings of that society. is given a synopsis of the address delivered Tuesday evening, June 23, at the Hotel Traymore, Atlantic City, on "Some Features of the Present Steel Rail Situation."

In his introduction Dr. Dudley took up the changes of the past 25 years, particularly the increase in the average speed of trains, the increase in loads, amounting to 75 per cent. in average wheel loads of cars, and over 100 per cent. in locomotives, and in the third place the increase in the volume of traffic which for more important railroads has amounted to 300 per cent. or more. Answering the question what the railroads have done to meet the changed conditions, the speaker referred, first, to the increase in weight of rails, and came to the conclusion that "if 12,500 lb. per square inch is assumed as a safe working stress for such steel as rails are made of, the present 85 and 100 lb. rails show stress well within this limit, even under a static wheel load of 30,000 lb., with a dynamic augment of 60 per cent. of the static load." Consideration was given in turn to what the railroads have done as to ties, tieplates, splice bars and fastenings, ballast, subgrade, maintenance of track, &c. Dr. Dudley considered that the importance of the subgrade had not been sufficiently appreciated, and said that if more study had been put on the problem of keeping water out of the subgrade, there would have been fewer rail failures.

Economies of Better Steel and Heavier Rails.

Referring to the discussions and committee meetings over rail specifications, it was stated that some railroad engineers had contended for a rail of minimum weight per yard so good that even though the track might not always be up to standard, there would still be no fail-The speaker could not endorse such shifting of responsibility, but in this connection raised a question as to where true economy lies in this contrast between the rail and the track maintenance. Three possibilities were considered as follows, and it was said that while data do not exist at present for a satisfactory answer to any one of the questions, the field opened up is most important:

1. Would better rails with the same weights per yard as are in use, even though obtained at increased cost, result in

such diminution of track expenses that economy would result?

2. Would the same so-called inferior grades of steel that are now being furnished, with increased weights per yard, it being conceded that increased weights per yard are not essential from the standpoint of strains, result in such diminution of track exthat economy would follow after paying for the increased weights?

Would better steel and increased weights per yard, at even still greater cost, be followed by such saving in other track expenses that it would be true economy to obtain such rails?

The Attitude of Bail Manufacturers

After saying that, in spite of mistakes and of a disposition to lay the whole burden on the railmaker, conscientious and faithful effort had been made by the railroads to meet the problems of changed conditions, the speaker turned to the record of the manufacturer. Many times rail manufacturers have said in effect: "Our mills are open to you. Here are the rails; take them or leave them." From the nature of the case the producer has essential information which the consumer does not have, and where safety to human life is involved he cannot assume an air of indifference or justly fail to co-operate in every reasonable way to the end that only safe material goes into the tracks. "Within two years entirely reputable engineers of railroad companies have said in my presence that they had been told by rail manufacturers that if they did not take the rails offered, irrespective of specifications and tests, they would not get any. Still further, if I may judge from my own experience, it is only within the past year or perhaps a year and a half that it has been possible to have what might fairly be called a consultation with the experts of the steel railmakers, over any point that involved the quality of the product in a conciliatory, co-operating way."

The New Sections.

The question of section was then considered and details were given of the A and B sections adopted by the American Railway Association and the new P. S. section of the Pennsylvania Railroad. All three have been illustrated and described in these columns. The A section, with its comparatively shallow head, wide base, thin flanges and greater hight than either of the other two, was pronounced undoubtedly the strongest, regarded as a girder. Those who opposed it feared that with such steel as is now possible the pounding of heavy traffic would cause crushing and splitting of the head, owing to internal physical defects in the metal. This led to the designing of section B. The Pennsylvania section is a step still farther away from the A section, having a heavier head, narrower base and thicker flange than the B section, with the same thickness of web. The Pennsylvania Railroad adopted it because it found that more rails fail from crushing and disintegration of the head, apparently due to the pounding of the traffic, than from any other one cause. The three sections meet the criticisms of the steel makers that proper finishing temperatures could not be secured with the sections heretofore in It was observed that "it may happen that progress in steel metallurgy will so diminish physical defects in the steel and so minimize the adverse effect of segregation that all three sections will be found worthy of pernetuation."

The Quality of Steel.

Asking the question, "Is the steel that goes into rails to-day better or worse than that made 15 or 20 years ago?" Dr. Dudley said that he was not able to go as far as some critics among railroad engineers who considered that the steel in the rails to-day is nothing like as good as it was 20 or 25 years ago. In two respects, however, he found inferiority: 1, the larger ingots of to-day necessarily lead to increased segregation; 2, the more rapid working of the Bessemer process has led to incomplete action between the final additions and the blown metal and to higher finishing temperatures in the finished rail. He thought, however, that a large percentage of the output of rails of the last 20 years has been approximately as good as that previously made. What he considered certain is that the need of to-day is for a steel even better that than earlier made.

Leave Discard to the Manufacturer.

On the subject of discard the position of the Pennsylvania system and the American Railway Association was spoken of as reasonable, in that they left the discard to the manufacturer and safeguarded the product by proper tests and by choosing the test piece from such a location as would make it to the manufacturer's interest voluntarily to discard the metal which would not stand the test. An illustration from the practice of the Pennsylvania Railroad was cited here:

When our axle specification was issued the whole question of discard was most carefully considered, and it was finally decided to select one axle at random for test from each heat of steel, after the axles from that heat had all been made up, steel, after the axles from that heat had all been made up, stamped with the heat number, and put in a pile by themselves, and further if the test axle stood all the tests all the axles made from that heat were accepted, and if not all were rejected. After the specification had been in operation a short time, a manufacturer who had worked with us during the development of the specification, said to me: "There is steel enough in each one of our ingots to make 13 axles of the size you are now using. As a matter of fact we only make and offer you for test nine, for if we should make the whole ingot into axles and you should get for test one made from the steel which we now discard, you would condemn the whole heat, quite to our loss." We are firmly of the opinion that the matter of testing rails can be so handled as to give similar satisfactory results.

Methods of Testing.

Passing to the subject of tests and testing Dr. Dudley reviewed the conditions as they have existed. He found much looseness in previous practice. The manufacturers have in many cases selected the rail end as sample for test, and they have taken the best steel in the ingot. There has also been in force the best two in three principle. If the first rail end stood the test the heat was

accepted, but if it failed a second was tested. If the second then stood the test a third was tested, and the fate of the heat was decided by the majority. Then steel from only one heat out of five was tested, but as every heat is a law unto itself, this practice gave no reasonable assurance that only good rails were accepted. The wonder is with such loose testing as has been in vogue that there have not been more rail failures. Equal looseness is found in the use of the drop test, particularly in having light weight anvils, and these not rigidly supported. The drop test the speaker considered the only available one for the present for these reasons:

1. It tests the whole rail in the condition in which it goes to the track, instead of a small fraction of the rail, as is

requisite in all cases of prepared test pieces.

2. It is sufficiently rapid, so that even though every blow is tested there is no fear of delaying the output of the mills while waiting for test pieces to be prepared or for slower tests to be made. We have known of a case where, with sufficient force to handle the test samples 55 tests have been made in half an hour

on a modern drop testing machine.

3. There seems little doubt that some of the strains or shocks which the rail actually receives in track are similar to those produced by the drop testing machine. This is clearly the case with a loose joint and a rapidly moving train. In case the track bolts have become loosened, the end of the rail, when the approaching wheel mounts it, certainly gets a blow similar to that given by the drop testing machine. We have known rails which have given long service in track to be broken in this way, and the fracture showed perfectly clean, sound metal.
4. If the specification requires that the deflection be taken,

the drop test reveals a good deal in regard to the physical prop-

erties of the steel.

The selection of the test piece should always be made by the inspector, and the bottom end of the top bloom was regarded as the best place from which to take the piece to make sure of sound steel, especially since covers and cooling devices are sometimes used on the top of the ingot when it is cast. For the drop test something a little more severe than the rail will receive in actual service was considered sufficient, though one trouble is that it is not known just how severe the shocks in service are. Recent tests of rails which had broken short off in track seem to indicate that a 15-ft. drop with a 3000-lb. tup and a 20,000-lb. anvil would have rejected two-thirds of the rails which railed in service on the Pennsylvania system; also that the 15-ft. drop acutally broke as many test pieces as a 19-ft. drop, other conditions being the same. "These tests should be much amplified before final conclusions can be reached, but as far as they go they seem to indicate that we must look to other causes than defective or poor steel for a portion of the rail breakages and that extremely severe testing is not necessary."

The Demands of the Situation.

Summing up his views on the present situation, Dr. Dudley said:

- 1. The crying need of the hour is positive, definite information. Upon dozens of points no positive data exist. During the discussions of the past two years or more, opinions have been as plentiful as leaves in autumn, but of positive, reliable, statistical information, or figures taken from properly kept records, there has been a dearth that was fairly oppressive. The steelmakers have not been as deficient in this respect as the railroad engi-
- 2. The time seems opportune for genuine progress to The railroads through their organization, which in a sense speaks for them all, the American Railway Association, have taken hold of the matter with vigor and have developed a large amount of valuable information, and for the first time in my 25 years' study of this subject, the steel rail manufacturers have shown a less antagonistic and more conciliatory and co-operative spirit than has usually characterized them.

3. The specifications proposed by the Pennsylvania Railroad system and by the American Railway Association seem to us to represent genuine progress and to be worthy of most careful study and trial. While they may be said to represent perhaps the best that can be done, until more positive knowledge is obtained, he would be a bold man that would claim that they will ultimately be satisfactory or final.

4. Whether the Bessemer process can be so modified and improved as to enable it to furnish rails that will be entirely satisfactory under the heavier wheel loads and denser traffic of to-day and the near future, or whether the basic open hearth will soon be the source from which steel for these rails will be furnished, are questions worthy of serious attention. Our own feeling is that if a small fraction of the time and money that has been spent in the past over the commercial development of the Bessemer process should in the next few years be spent in getting sound ingots, free from blowholes, slag and manganese sulphide, if this shall be found to be as serious as it now looks, and in overcoming or minimizing segregation, it will last for many years to

5. The American Society for Testing Materials has a most important duty to perform at this juncture. stimulating the development of information, by furnishing an arena for the presentation of such papers on the metallurgy of steel as are on the programme for this meeting, by arousing interest in testing machines and methods of testing, by furnishing a forum where producer and consumer can meet on common ground and discuss their differences unhampered by commercial considerations or by artificial distinctions of professional ethics, and by keeping their own specifications up to date and utilizing new information as fast as it is obtained, it can so fill the field it occupies that when the ultimate record is made up its contribution will be by no means among the

The Mechanical Engineers' Convention.

DETROIT, MICH., June 23, 1908 .- (By Telegraph.) -Detroit, noted for its popularity as a convention city, is likely to maintain its usual record of an average of one convention a day during the convention season. There are eight scheduled for this week, of which four will attract many of the same people—the American Society of Mechanical Engineers, the American Society for the Promotion of Engineering Education, the Society of Automobile Engineers and the Society of Gas Engine Manufacturers. This fact is largely responsible for the unusually large first night registration of members of the American Society of Mechanical Engineers and guests

The opening session was held Tuesday evening at the convention headquarters, the Hotel Cadillac. Mayor Thompson made the address of welcome, which was responded to on behalf of the society by the president, M. L. Holman of St. Louis.

The usual informal reception followed, the principal purpose of which is to help the visitors become acquainted with the members of the local Entertaining Committee. The importance of this is emphasized by the large number of manufacturing and engineering enterprises located in and around this city, only a few of which at the most it will be possible for any individual to visit during his stay. It is therefore to the advantage of each to select early those which particularly interest him.

The local Ladies' Committee has been active in preparing for the visiting ladies, and several trips calculated to make their stay pleasant have been arranged for.

The iron industries in the territory naturally tributary to Nashville, Tenn., are of considerable importance. In this territory are the following furnaces: Napier Furnace, Napier, Lawrence County; Rockdale Furnace, Rockdale, Maury County; Bon Air Coal & Iron Company's furnaces, Mannie, Wayne County; Cumberland Furnace, Dickson County, and Red River Furnace Company's Helen Furnace, Clarksville, Montgomery County. tically all of these furnaces are running and making an increased output. At a recent date the Napier furnace was relined. The Bon Air Coal & Iron Company is running one of its two furnaces. Important improvements have recently been made at the Rockdale Furnace.

NEWS OF THE WORKS.

Iron and Steel.

At the recent annual meeting of the Burden Iron Company, Troy, N. Y., James A. Burden was elected president; Williams P. Burden, vice-president; John L. Arts, general manager, and Nicholas J. Gable, secretary.

Operations have been resumed in all departments of the steel mill of the Tennessee Coal, Iron & Railroad Company at Ensley, Ala.

The rolling mill of the Tennessee Coal, Iron & Railroad Company at Bessemer, Ala., will be put in operation July 1. Repairs are being made to the company's furnaces, Nos. 2 and 3, at the same place.

General Machinery.

In addition to the erection of four new buildings at its Austin, Minn., plant, the Geo. A. Hormel Packing Company of that city has acquired a site on Michigan street, Duluth, Minn., for the erection of a six-story cold storage plant. Work on this plant may possibly be commenced this fall, but as yet no plans or specifications have been prepared.

The plant of the Kentucky Drill Company at Louisville, Ky., a subsidiary of the American Seeding Machine Company, which was recently destroyed by fire, will not be rebuilt, as the business has been moved to Richmond, Ind., where it has been merged into the plant at that place.

Power Plant Equipment.

The plans of the new power house, recently completed by Charles T. Main, mill engineer and architect, Boston, for the Bigelow Carpet Company, Clinton, Mass., call for brick buildings comprising a power house, 63 x 102 ft.; boiler house, 50 x 197 ft.; coal pocket, 70 x 197 ft., and a pump house, 27 x 48 ft. The equipment will consist of two electrical units, one of about 750 kw. and the other of about 350 kw. Six new 84-in. by 19-ft. boilers are to be added to the eight old boilers of the same size. Two fire pumps and four feed pumps complete the power outfit. Pipe tunnels will connect the boiler house with the dye house, and the power house with the weave mill, the former for steam piping and the latter for electric power cables.

The Board of Aldermen of New York has appropriated \$2,-580,000 for improvements to the Brooklyn water supply system.

Plans and estimates are being prepared by Burns & McDonnell, Kansas City, Mo., for an electric light and water works system at Moundridge, Kan. When the estimates are received the question of a bond issue for this purpose will be submitted to the voters.

W. F. Lyons, Bryant Building, Kansas City, Mo., will build an ice plant, 160 x 390 ft., in which will be installed machinery with a daily capacity of 100 tons. The plant will cost about \$100,000 and the equipment will include one 100-kw. and one 300-kw. generator. C. E. Sample is engineer in charge.

Bonds in the sum of \$10,000 have been authorized by the City Council of Miles City, Mont., for the improvement of its electric plant.

Plans are being prepared for a municipal electric light plant at Little Rock, Ark., by J. W. Bleidt, city electrician. The system contemplated, it is estimated, will cost about \$40,000, and will generate current for 750 arc lamps. Motive power will be supplied by a 450-hp. steam turbine.

The city of Brainard, Minn., has in contemplation the construction of an electric light and water works system for which plans have been prepared by George Cadogan Morgan, Royal Insurance Building, Chicago. The question of a bond issue to provide the necessary funds for this improvement will be submitted to the voters, and when the bonds are approved and sold the machinery and equipment required will be advertised and let.

Through the sale of bonds a fund of \$16,000 has been provided by the city of McKinney. Texas, for water works and electric light improvements. The sum will be equally divided between the two systems.

Dravo, Doyle & Co., Lewis Building, Pittsburgh, have recently received a number of contracts for Erie (Ball) engines and other power appliances as follows: A 20 x 20 in. automatic engine, directly connected to a 200-kw. generator, and an 18 x 18 in. automatic engine, directly connected to a 150-kw. generator, to the Pittsburgh & Belmont Coal Company, Lafferty, Ohio; two 16 x 16 in. automatic engines, each directly connected to 100-kw. generators, Erner-Hopkins Company, Columbus, Ohio, to be installed to furnish power and light for the Ohio & Texas Sugar Company, Brownsville, Texas; an 18 x 28 x 24 in. horizontal, side crank, cross compound, Ball, nonreleasing, valve Corliss engine, Carnegle Technical School, Pittsburgh; two 16 x 18 in. Ball side crank, nonreleasing Corliss valve engines, directly connected to 150-kw. generators, Iron City Improvement Company, to be installed in the new Fort Pitt Hotel Annex. The company also reports steam turbines to be moving in a satisfactory manner, several sales in that line having been made recently. Tiffany & Co., New York, have purchased a complete power plant, consisting of two De La Val Steam Tur-

bine Company's generator sets, including Heine water tube boilers, Cochrane feed water heaters, &c. The Board of Public Service of Sandusky, Ohio, has purchased two 6,000,000-gal. De La Val steam turbine driven pumps to be used in connection with the new filtration plant, recently contracted for by the city of Sandusky. Other sales of De La Val steam turbine and motor driven turbine pumps, Cochran heaters and Cochran live steam and exhaust steam separators are reported.

Foundries.

Chas. A. Lyerly, Chattanooga, Tenn., recently purchased at public auction the Herron Pump & Foundry Company's plant for \$27,000. A company will be organized and the plant put in operation at an early date.

For the reconstruction of the Douglas, Wyo., water works system bids will be received until June 30 on approximately 1000 ft. of 4, 6 and 12 in. cast iron pipe and the necessary fittings and material for laying it; seven 12-in.; seven 8-in.; 42 6-in.; 28 4-in. valves and valve boxes; 17 fire hydrants and 13 extra hydrant boxes, 6-in. openings. Funds to the amount of \$50,000 have been provided by the sale of bonds to defray the expense of this work.

The American Malleables Company, New York, has not yet definitely decided upon the rebuilding of its plant at Bloomfield, N. J., which was recently destroyed by fire.

T. H. Symington & Co., Corning, N. Y., are having plans prepared for a new manufacturing plant for the production of journal boxes and other railroad specialties, to be erected either at Corning or Elmira. The plant will consist of a foundry, 400 x 700 ft., carpenter and pattern shops.

Bridges and Buildings

Bids are being taken by the Paxton & Vierling Iron Works. Omaha, Neb., for the construction of an extensive addition to its structural shops. The new building will be 64 x 300 ft., and will greatly increase the capacity of the works. Most of and machinery equipment and tools have been purchased.

The Nashville, Tenn., Bridge Company is erecting a five-story office structure at its manufacturing plant in the eastern part of the elty.

The plant of the Tamaqua Mfg. Company, Tamaqua, Pa., consisting of foundry and machine shop, was destroyed by fire June 19, the loss being about \$100,000.

The Gallipelis Foundry & Machine Company's plant at Gallipelis, Ohio, was recently burned. The loss is placed at \$10,000.

The large plant at Shelby, Ohio, of the Shelby Steel Tube Company, a subsidiary of the United States Steel Corporation, was burned June 19, the loss being estimated at over \$500,000. The buildings destroyed covered several acres of ground. The lire is thought to have been due to spontaneous combustion.

The plant of the Richmond Stove Company, Richmond, Va., was destroyed by fire June 17, the loss being about \$100,000.

Hardware.

The Union Steel Screen Company, Ltd., Albion, Mich., manufacturer of oven racks, sand and coal screens, &c., has bought the plant and equipment of the Ideal Mfg. Company, Lafayette, Ind., which will be removed immediately to Albion, where the manufacture of the goods formerly made by the Ideal Company will be continued. The Union Steel Screen Company will thus manufacture a much larger line, including oven racks, refrigerator shelves, wire guards, sand and coal screens, elevator inclosures and novelties.

Miscellaneous.

Edgar M. Moore & Co., Lewis Building, Pittsburgh, Pa., have sold and installed a monorall system, alternating current, 1700 ft. long, of 2 tons capacity, for handling scrap material, and a magnet for the Sligo Iron & Steel Company, South Connellsville, Pa.

The Pennsylvania Steel Pulley Company, N. S., Pittsburgh, Pa., manufacturer of Keystone steel split pulleys, has completed the installation of additional grinding machinery and made other improvements doubling the capacity in several departments. The company is operating its plant and reports inquiries more plentiful and that orders are increasing in number and for large quantities.

An oil mill is to be erected at Snyder, Okla., for the construction of which \$100,000 will be expended.

Plans are being prepared by M. F. Sullivan, city engineer, for a water works concrete reservoir at Gulfport, Miss., the construction of which is now under consideration.

The Massachusetts Fan Company, Watertown, Mass., is making a large export shipment of fans to the Sutcliffe Ventilating & Drying Company, Manchester, England. This comprises six three-quarter housed steel plate fans in various sizes, equipped with new frictionless ball bearings.

The entire plant of the Neafie & Levy Shipbuilding Company at Beach and Palmer streets, Philadelphia, Pa., will be sold at public auction July 28. The property comprises a group of buildings covering eight acres, with a frontage of 400 ft. on the Delaware River, which will be sold subject to ground rents of \$101.06 per year, and a mortgage of \$277,000. A de-

posit of \$10,000 will be required on the day of the sale and the balance within 30 days after confirmation by the United States Court.

PERSONAL.

F. J. Smith, treasurer of the S. W. Card Mfg. Company, Mansfield, Mass., has returned from a brief business trip abroad.

Edward Bailey Cook, manager of the Warwick Iron & Steel Company, Pottstown, Pa., has returned from a brief trip to Europe.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Company, is expected back at an early date from a several months' stay abroad.

Dr. R. W. Raymond, secretary of the American Institute of Mining Engineers; Edgar S. Cook, president of the Warwick Iron & Steel Company, Pottstown, Pa.; T. W. Robinson, vice president of the Illinois Steel Company, and H. A. Brassert, blast furnace manager of the Illinois Steel Company, will sail for Europe with James Gayley on July 1.

W. E. Corey, president of the United States Steel Corporation, is expected back from France toward the middle of July.

At a meeting of the Board of Directors of the Lake Superior Corporation J. Tatnall Lea was elected a vicepresident and F. W. Ayer, president of the Merchants' National Bank, a director, both to succeed Francis B. Reeves, who resigned recently.

C. S. Redfield, advertising manager of the Yale & Towne Mfg. Company, and the recently elected president of the Technical Publicity Association, has gone to Europe, expecting to return late in August.

A. K. Church, for the past five years manager of the National Tube Company's American Works at Middletown, Pa., has resigned, effective July 1.

H. E. Miles, president of the Racine-Sattley Company, Racine, Wis., and vice-president of the National Association of Manufacturers, has accepted an invitation to speak at the annual banquet of the American Chamber of Commerce in Paris on July 4. Mr. Miles will speak on the tariff question and reciprocity. In August he will attend, as a delegate from the United States, the International Council to be held at Westminster, London, for the discussion of free trade relations between the countries of the world.

William A. Roome, who has been connected with A. M. Castle & Co. for several years in the capacity of sales agent, and prior to that with the Scully Steel & Iron Company in its sales department, has opened an independent sales agency at 943 Monadnock Block, Chicago, representing manufacturers of boiler and tank plate, iron and steel boiler tubes and boiler and structural rivets.

Having disposed of his interest in the Ajax Forge Company, Chicago, T. A. Griffin, formerly president of the company, has retired and is succeeded as president by Rudolph Ortmann. Mr. Ortmann is also vice-president of the Griffin Wheel Company.

T. F. Saiter, well known as an engineer in the field of hoisting and conveying apparatus, is now located in a new position as chief engineer of the Standard Roller Bearing Company, Philadelphia.

Geo. A. Tripp, treasurer of the Iroquois Iron Company, Chicago, sailed June 18 for an absence of about two months in Europe.

W. W. Dean has been elected president of the Dean Electric Company, Elyria, Ohio, to fill the vacancy caused by the recent death of Samuel B. Rawson. A. E. Barker was made first vice-president in place of Mr. Dean, and Max Koehler was made second vice-president and T. M. Brush third vice-president. F. H. Sadro was elected to fill the vacancy on the Board of Directors.

Cass Harkins, for more than 20 years a representative of several prominent machinery concerns in the Columbus, Ohio, District, has been appointed general agent for the States of Ohio and West Virginia for the

Goulds Mfg. Company, Seneca Falls, N. Y. He expects to open his Cleveland offices about July 1, and will continue to look after the interests in his new territory of the Atlas Engine Works, Indianapolis, Ind.

Sidney B. Williamson, division engineer in charge of the Miraflores locks and dams on the Panama Canal, who has been visiting the trade for two weeks past to gather necessary information for the construction work there, left New York on Wednesday to resume charge of the work on his division.

OBITUARY.

WILLIAM B. LEEDS.

William B, Leeds, at one time a leading figure in the American tin plate industry, died suddenly at Paris, France, June 23. Born in Indiana in 1861, he began life as a florist in Richmond, that State, and in 1883 he married a relative of Harry Miller, then an official of the Pennsylvania Railroad. Mr. Miller started the young man in the railroad business, and eventually he was made a division superintendent.

About this time Mrs. Leeds inherited a considerable sum of money, which Mr. Leeds utilized in advancing the interests of the tin plate industry. There was in Elwood, Ind., at the time, the first tin plate plant of any importance. Mr. Leeds was quick to recognize the opportunities in this branch of industry presented by the McKinley tariff act, and D. G. Reid, who was also in Richmond, became interested in the promotion of tin plate interests. The two men succeeded from the outset.

In 1898, with the brothers J. H. and W. H. Moore, they formed the great consolidation of tin plate interests, known as the American Tin Plate Company, Mr. Leeds becoming chairman of the Executive Committee and Mr. Reid president. After the formation of the United States Steel Corporation, they sold to it their tin plate interests. Much of the profit was invested forthwith in the Rock Island Railroad system. The four assumed control of the Rock Island at once, and made a holding company of it. Other roads were acquired, until the Rock Island system became what it is to-day., After continuing to be a director of the Rock Island until February 1, 1906, Mr. Leeds resigned from all boards of directors and from all committees associated with the system. He retained, however, his connection with the American Sheet & Tin Plate Company, of which he was a director until his death, and many other financial and industrial companies.

CURTIS S. BARRETT, president of the Dover Fire Brick Company, Cleveland, Ohio, died suddenly of heart failure June 20, aged 68 years. He had been identified with the coal and fire brick industry in Cleveland for nearly 40 years.

PETER H. JACKSON, one of the founders of the James L. Jackson Iron Works, said to be the first firm to make iron and steel work for building purposes in New York City, died June 17, at his home in East Oakland, Cal., aged 79 years. He leaves a daughter and three sons, one of the latter being Francis D. Jackson, vice-president of the Hecla Iron Works, Brooklyn.

In their eagerness to reduce operating expenses, some of the railroads appear to be going pretty far. The statement is made on good authority that on some lines the broken parts of cars in service are replaced by robbing rolling stock sidetracked for want of tonnage. It looks as though there might be a good deal of rush repair work when the crops begin to move and that some lines may find themselves unable to handle traffic in spite of a nominal large reserve of rolling stock.

Mexico is to manufacture its own tin plate, according to a press dispatch from Tampico, which says that a British syndicate has acquired the site for a tin plate and corrugated iron manufacturing plant, and that the Government has granted a favorable concession for the new industry.

The Iron and Metal Trades

There is a slightly more cheerful tone in the Steel industry, due to the fact that bookings in some branches are a little larger, and that specifications are coming in a little more freely. The improvement, however, is not marked, nor is it general.

Quite a fair tonnage of Foundry and Basic Pig Iron has been purchased in New England and on the seaboard, at prices which show no improvement. In the Central West and in the Chicago District buying is rather light, and while the majority of furnaces maintain their firm attitude, there are a few who are still willing to make concessions in order to place metal.

In New England one interest has bought 12,000 tons of Foundry Iron at close prices, while in eastern Pennsylvania sales of Basic Pig aggregating 15,000 tons have been made at \$15.25, delivered. One large consolidation which recently placed 10,000 tons of Foundry Iron for Buffalo delivery still has nearly as large a quantity to place for Eastern works, and is buying from hand to mouth in the meantime.

Steel Billets are very dull. There is an inquiry in the market for 16,000 tons of small Billets for a horse shoe company, for delivery at Chicago and in the East, the greater part going to the former district.

The Rail trade continues very quiet, so far as new orders are concerned. American mills secured only 7000 tons out of the large tonnage recently placed by Canadian roads. The Grand Trunk Railroad has not yet allotted its requirements, of which a more considerable share is likely to come to works on this side of the border.

Quite a number of small Structural contracts have been awarded in different parts of the country during the last week. In the aggregate the tonnage is quite fair. The largest single item is 3000 tons of the Hotel Astor extension. The contract for the 10,300 tons of Structural Material for the Educational Building, at Albany, has not yet been let.

There is no truth in the story widely circulated that the Youngstown Sheet & Tube Company has taken a large order for Tubes for the Pacific Coast which will keep the mills busy for a long period. The Tube mills are running at the rate of about 50 per cent. of capacity.

While inquiries for Bars, Hoops, Bands and some lines of Merchant Steel are more numerous, and specifications are more plentiful, the Sheet trade continues in an unsatisfactory condition. The Tin Plate mills are still very

The export trade in Iron and Steel is showing more animation. India and China are buying more liberally and some good business has been done in South Africa lately.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italies.

At date, one week, one month and one year previous.

At date, one week, one mone				
	June24	June17	May 27,	June26,
PIG IRON, Per Gross Ton:	1908.	1908.	1908.	1907.
Foundry No. 2, Standard, Phila-	040 50	010 50	#10 7X	604 50
foundry No. 2, Southern, Cincin-	\$16.50	\$16.50		
nati	15.25	15.25	14.75	24.25
Foundry No. 2, Local, Chicago	17.50	17.50	17.25	26.00
Bessemer, Pittsburgh	16.90	16.90	16.90	24.15
Gray Forge, Pittsburgh	14.90	14.90	14.90	23.15
			20.00	27.50
Lake Superior Charcoal, Chicago BILLETS, &c., Per Gross Ton:	20.00	20.00	20.00	21.00
Person Pillate Pittsburgh	25.00	25.00	28.00	29.50
Bessemer Billets, Pittsburgh	27.00	27.00	30.00	33.00
Forging Billets, Pittsburgh			29.20	32.50
Open Hearth Billets, Phila	26.20	26.20		
Wire Rods, Pittsburgh	33.00	33.00	35.00	36.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton	:			
Steel Rails, Melting, Chicago	12.50	13.00	12.00	18.75
Steel Rails, Melting, Phila	13.50	13.50	13.00	19.00
Iron Rails, Chicago	15.50	15.50	15.00	24.50
Iron Rails, Philadelphia	18.00	18.00	18.00	27.50
from Rails, Filliadelphia		13.00	13.00	
Car Wheels, Chicago	13.00			
Car Wheels, Philodelphia	13.50	13.50	14.00	
Heavy Steel Scrap, Pittsburgh	13.25	13.25	13.00	18.25
Heavy Steel Scrap, Chicago	11.50	12.00	11.00	
Heavy Steel Scrap, Phila	13.50	13.50	13.00	. 18.25
FINISHED IRON AND STEEL,				
Per Pound:	Cents	Cents	Cents	. Cents.
Refined Iron Bars, Philadelphia.	1.40	1.40	1.45	1.831/2
Common Iron Bars, Chicago	1.50	1.50	1.65	1.78
Common Iron Bars, Pittsburgh.	1.40	1.40	1.50	1.70
Steel Bars, Tidewater, New York	1.56	1.56	1.76	1.86
Steel Bars, Pitisburgh	1.40	1.40	1.60	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.86	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.70	1.70
Beams, Tidewater, New York	1.76	1.76	1.86	1.86
Beams, Pittsburgh	1.60	1.60	1,70	1.70
Angles, Tidewater, New York	1.76	1.76	1.86	1.86
Angles, Pittsburgh	1.60			1.70
Chala Overned Steel Inttahungh			1.55	
Skelp, Grooved Steel, Pittsburgh	1.40			
Skelp, Sheared Steel, Pittsburgh.	1.50	1.50	1.65	1.90
SHEETS, NAILS AND WIRE,	Cont	0	Conto	Clarita
Per Pound :	Cents			. Cents.
Sheets, No. 27, Pittsburgh	. 2.40	2.40		
Wire Nails, Pittsburgh	1.95	1.95	2.05	
Cut Nails, Pittsburgh	1.75	1.75	1.85	2.05
Barb Wire, Galv.,. Pittsburgh	2.40	2.40	2.50	2.45
METALS, Per Pound:	Cents	. Cents	. Cents	. Cents.
Lake Copper, New York	13.00	13.00	12.87	1/2 23.50
Electrolytic Copper, New York	12.87	12.87		
Spelier, New York	4.55		4.55	
Spelter, St. Louis	4.40			6.35
Lead, New York	4.50			
Lead, St. Louis	4,40			
Tin, New York	27.60			
Antimony, Hallett, New York				12.00
Nickel, New York	45.00		45.00	45.00
Tin Plate, 100 lb., New York	\$3.89	\$3.89	\$3.89	\$4.09

Chicago.

FISHER BUILDING, June 24, 1908.—(By Telegraph.)

FISHER BUILDING, June 24, 1908.—(By Telegraph.)

The favorable influence of promising crop prospects is the paramount factor of strength underlying present market conditions, and its positive effects are seen in the heavy shipments of agricultural machinery now being made by the manufacturers. These are reported by some of the leading makers to be as great in volume as in any former season. Naturally this movement is reflected in more liberal purchases of material by these interests, which are the first to show an increase in consumption of Pig Iron. Other manufacturers, especially those dependent upon the railroads for business, have not yet felt a pronounced forward impulse. business, have not yet felt a pronounced forward impulse, and the demand from this source still lags. Rumors to the Rumors to the effect that the purchasing departments of a number of railroads have instructions to resume purchases on a more liberal scale at an early date are still persistent. While confirmation in the way of an actual increase in orders is yet lacking, it seems highly probable that hopes inspired by these rumors will be in some measure realized in the near future owing to preparations that must of necessity be made for moving the coming crops. Only a few small fabricating contracts were closed last week, the chief of which was one for a bascule bridge requiring 1600 tons. Plates, Sheets, Merchant Pipe and Boiler Tubes are without any develop ments of interest, there being no improvement in demand since the recent revision of prices. Together with new orders placed since the reduction of prices in Bars and the tonnage due on unspecified contracts, it is believed that the greater part of implement makers' requirements for the new

season is covered. Specifications against these contracts have not yet begun to come in, and those from other industries are light. The Scrap market has reacted somewhat, and though prices have not materially declined, yet the market is essentially weaker. Forces which have been acting to support it during the past two or three weeks have been withdrawn, and with no improved demand from consumers lower prices are looked for. Only a small part of the mill capacity in this district will be active in July. The Moline, East Chicago and East St. Louis mills of the Republic Iron & Steel Company will be closed for most of that period, as will all those of the Inland Steel Company, except the Sheet department.

Pig Iron.—A fair degree of support is afforded to the Pig Iron market by the considerable number of orders of moderate tonnage still being placed. These are coming largely from the makers of agricultural implements and machinery, there being little demand from the jobbing foundries. An encouraging feature of the situation is the unmistakable increase shown in the melt of the former interests, who are now taking their regular quota of shipments without hesitation. Requests for hold up of deliveries, which are not numerous, come almost wholly from the jobbing foundries. The week's transactions have included several lots of 1000 tons and over, but the majority of orders range from 200 to 500 tons. Northern furnaces secured the greater part of the tonnage placed, which included a fair proportion of Malleable Bessemer. While it is maintained that \$17.50, furnace, is being firmly held by the principal sellers of Northern Iron, it is nevertheless true that Valley Iron is being offered below this figure. One sale of a few hundred tons of No. 2 Foundry is reported on the basis of \$14.50, Valley furnace, which, however, was not for delivery in this immediate market; \$14.35, Valley, which was offered by another seller for a small tonnage, failed of acceptance. It is evident therefore that the minimum price quoted on Northern Iron, which continues firm, at \$12, Birmingham. Several of the principal producers of that district are still asking \$12.50 for fourth quarter, but no business is being placed on this basis. It is expected that within the next 30 days at least three Northern stacks will be blown in, all of which will start with a fair amount of orders. As to the future strength of the market, something depends upon the prompt acceptance of deliveries against recent contracts, but in view of the conservatism shown in amounts purchased it is believed they are prepared to take care of what they have bought. Altogether the situation in Pig Iron is one in which strength rather than weakness predominates. The following pric

Lake Superior Charcoal\$	20.00 to	\$20.50
Northern Coke Foundry, No. 1	18.00 to	18.50
Northern Coke Foundry, No. 2	17.50 to	18.00
Northern Coke Foundry, No. 3	17.00 to	
Northern Scotch, No. 1	18.50 to	
Southern Coke, No. 1	16.85 to	
	16.35 to	
	15.85 to	16.35
	15.35 to	
	16.85 to	17.35
	16.35 to	16.85
	14.35 to	14.85
Southern Mottled	14.10 to	
	17.50 to	
	18.40 to	18.90
Jackson Co. and Kentucky Silvery, 6 % Jackson Co. and Kentucky Silvery, 8 %	19.90 to	20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to	21.40
Jackson Co. and Kentucky Silvery, 10 %	22.90 to	23.40

(By Mail.)

Billets and Rods.—An inquiry is in the market from a prominent manufacturer of Horseshoes for small Rerolling Billets, asking a price on 16,000 tons, on the greater part of which local delivery is specified, the remainder going to supply an Eastern branch. It is understood that the inquiry has thus far elicited no offers that seem attractive to the buyer, and as far as known the order has not yet been placed. There is nothing doing in Forging Billets, which are quoted at \$28.50, base, Chicago. Wire Rods are moving slowly in sympathy with the slack demand for Wire Products. We quote prices as follows: Bessemer, \$33; Basic, \$34, all at Pittsburgh.

Rails and Track Supplies.—Last week's market brought out nothing of interest either in orders or inquiries on Standard Section Rails. The only sale of any kind reported as made during the week was about 200 tons of high T-Rails by the Pennsylvania Steel Company. A moderate run of orders for Light Rails is being entered, the bookings of the principal interest being at the rate of about 2500 tons per month. New business in Track Supplies from the railroads is still closely restricted, and not much change in this respect is looked for until after the close of the present month. Regular quotations on Light Rails continue to be shaded from \$3 to \$4, and even more in competition with rerolling mills. We quote, as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.20c. to 2.25c., base, Square Nuts, and 2.35c. to 2.40c., base, Hexagonal Nuts. The store prices on Track Supplies range

from 0.15c, to 0.20c, above mill prices. Light Rails, 25 to 45 lb., \$28; 20-lb., \$29; 16-lb., \$30; 12-lb., \$31. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—The few fabricating contracts closed last week were principally of small tonnage, the aggregate of which was even less than that of the week previous. The chief transactions comprised 500 tons for the South Side car barns of the Chicago City Railway Company, taken by the Hansell-Elcock Company, Chicago; 140 tons placed by the Central Colorado Power Company with the Springfield Boiler & Mfg. Company, and 125 tons for a converter building for the Bakaklala Consolidated Copper Company, which was awarded to the Minneapolis Steel & Machinery Company. The King Bridge Company, Cleveland, was the lowest bidder on the 1600 tons of material required for the Erie street bascule bridge, Chicago; its bid of \$126,800 was \$7098 lower than the highest of the remaining six bidders. No inquiries of notable size are included among those recently received, and there is still a pronounced disposition among builders to hold off. Specifications are accumulating very slowely at the mills, the Structural mill at the South Works not having enough to warrant starting up. Prices from store at 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.78c., This is

Plates.—Plate orders are extremely scarce. This is especially true of Sheared Plates for boiler, tank and car work. The demand for Universal Plates is relatively better, but the fact that local mills, both Sheared and Universal, have been shut down for some weeks for lack of specifications is plainly indicative of the situation. However, enough specifications have come in in the meantime to warrant starting up, and it is expected the mills at the South Works will begin operation next Monday. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72-in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets—The general volume of business has, if any-

Sheets.—The general volume of business has, if anything, diminished somewhat in the past two weeks. The demand for the heavier gauges is extremely light, and while a somewhat better business for the thinner sizes is noted it is only moderate there. Prices are reported to be firmly held, except for concessions of \$1 a ton made by a few small mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 18, to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Specifications have been coming out a little better in the past week or so, but the principal makers of Steel Bars have not added much tonnage to their first bookings under the new price. There are still some contracts from implement makers pending which when closed will add around 15,000 tons to the total already placed by these interests. The volume of new Bar Iron orders is a little greater and specifications are better, in consequence of which mills are running fuller. There will not be many Bar mills in operation in this district in July, but the Interstate Iron & Steel Company expects to keep its East Chicago plant running through that month. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—Jobbers are not specifying any more freely now than before the recent reduction in prices. They are seemingly holding their orders closely within the range of actual consumption, and are apparently not yet willing to anticipate future requirements. The following mill dis-

counts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—Both jobbers and manufacturers are ordering for only actual needs, which as yet in Merchant Tubes show no signs of expansion. Railroads have not yet commenced buying Locomotive Tubes, although it is believed some improvement in orders from this source will be seen in the near future. Prices continue unchanged. Mill quotations for future delivery, on the base sizes, are as follows: 2% to 5 in., in carload lots. Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

1 to 1½ in	Steel.	Iron.	Seamless.
1¾ to 2¼ in	50	35	35
2½ in	521/2	35	35
2% to 5 in	60	471/2	471/2

Merchant Steel.—Quite a number of contracts have been entered the past week from implement makers, but specifications are offered sparingly. Some betterment in this respect is noted among the jobbers whose sorting up orders have been more liberal under the new scale of prices. Shafting orders of any considerable size are quite infrequent, the demand being generally inactive. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1½ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to Sc., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. in less than car lots, base territory delivery.

Cast Iron Pipe.—A few small lettings have been closed and a fair number of miscellaneous orders have been entered, but the aggregate tonnage of all is diminished. There are, moreover, no large requirements from municipalities or other sources reported, though prospectively the situation is not without features of encouragement. The continued firmness of Pig Iron at its present level furnishes an element of strength to the market, and is believed to be responsible for a number of inquiries that have been received respecting forward requirements. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., \$27; 6 to 12 in., \$26; 16-in. and up, \$25; with \$1 extra for Gas Pipe.

Metals.—Only a moderate amount of business has developed, the greater part of which is comprised of small orders for present consumption. There has not been enough improvement in the industrial situation as yet to make consumers anxious regarding prospective requirements. Prices continue practically stationary in all Metals, with no significant movement in any of them. We quote as follows: Casting Copper, 13½c.; Lake, 13½c. to 13¾c., in car lots for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 32½c.; small lots, 32½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.95c. to 5.05c., for 50-ton lots; in car lots, 2½c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10½c.; Sheet Zinc is \$7, list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10½c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 27c.

Old Material.—The temporary rise in values of Old Material has, apparently, reached its limit and signs of reacting the state of th

Old Material.—The temporary rise in values of Old Material has, apparently, reached its limit and signs of reaction are not wanting. Most of the strength developed was due to a spurt of activity in Rerolling Steel Rails, other grades being only sympathetically affected. That this demand has subsided is evident from the meager sales of the week, which have included no important lots of Steel Rails or other material. The effective support of dealers, who have recently been buying to cover short sales and also speculatively, has to a large extent been withdrawn. Neither the mills nor melters are now in the market for tonnage other than that needed for immediate consumption. Under the circumstances, therefore, the necessary sustaining influences are withdrawn and the tendency is toward further weakness, although prices have actually receded on but few grades. Not much material is being offered by the railroads, there being no lists reported in the market this week. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails		
Old Steel Rails, rerolling	14.25 to	14.75
Old Steel Rails, less than 3 ft	12.50 to	13.00
Relaying Rails, standard sections, sub-		
ject to inspection	19.00 to	20.00
Old Car Wheels	13.00 to	13.50
Heavy Melting Steel Scrap		
Frogs, Switches and Guards, cut apart.	12.25 to	12.75
Mixed Steel	9.50 to	10.00

The following quotations are per net ton:

Iron Fish Plates\$1	4 25 to	\$14.75
Iron Car Axles	6.50 to	17.00
TION CUL TENEDON TO THE TOTAL TO THE TENEDON THE TENEDON TO THE TENEDON TO THE TENEDON TO THE TENEDON TO THE TE	5.25 to	15.75
	2.00 to	12.50
TIO. I MILLIONG TILOUBACTORIO		11.50
Tio. T tentitione il roughter il	1.00 to	
	1.75 to	12.25
	2.75 to	13.25
	9.50 to	10.00
Mixed Busheling	7.00 to	7.50
Iron Axle Turnings	5.75 to	6.25
Soft Steel Axle Turnings	5.75 to	6.25
Machine Shop Turnings	5.50 to	6.00
Cast Borings	5.00 to	5.50
	5.00 to	5.50
	6.50 to	7.00
ATO. A MARKET COLUMN TO THE CO		
	5.50 to	6.00
	8.25 to	8.75
No. 1 Cast Scrap 1	2.25 to	12.75
Stove Plate and Light Cast Scrap 1	0.25 to	10.75
	1.25 to	11.75
	0.25 to	10.75
	8.50 to	9.00
Pipes and Flues	0.00 00	0.00

Philadelphia.

PHILADELPHIA, PA., June 23, 1908.

The situation is regarded by manufacturers of Pig Iron and of some lines of finished material as more encouraging. At the meeting of the Eastern Pig Iron Association last week reports showed the tonnage of orders booked during the month to have increased on an average of 50 per cent. over that of the previous month, while the average decrease in stocks on the furnace banks is reported as being between 20 and 25 per cent. The volume of business coming out was considered good under the circumstances, and represented very fairly about the present rate of production, and with a few was somewhat in excess of the output. In some lines of finished material, principally Plates and Sheets, makers report an improvement in the tonnage of orders booked. This comes mostly from the small buyers, the larger propositions being withheld in nearly all lines, buyers not being satisfied as yet that prices are at rock bottom. Taken all in all, the amount that has come out since the reduction in prices has not been large, the opinion being that the cut was not sharp enough to cause consumers to enter the market extensively, nor to encourage the undertaking of new propositions, particularly at a time when the political situation is looming up conspicuously.

Pig Iron.—While the larger proportion of sales of Foundry Iron have been made up of small and medium sized tonnages, there have been some few sales of large lots, and the aggregate sold during the week reaches a very fair total. As a rule stocks in foundry yards are not large and melters are coming into the market more frequently and for somewhat better quantities. There is a strong disposition to buy for forward delivery, but this is discouraged by nearly all the producers, who much prefer to do business for the third quarter only. For delivery in this territory in the last quarter the majority of sellers ask and have made sales at an advance of 50c. a ton over the price for third quarter delivery. For New England delivery there still seems to be a disposition to shade quotations, and a sale of 2500 tons of No. 2X Foundry for delivery the last half of the year is reported, at a price equal to \$16.50 here. In this territory, however, where buying is more conservative no shading is reported, Eastern furnaces refusing to go below a basis of \$16 at furnace for No. 2X Iron. Sales of both No. 2X and No. 2 Plain are freely reported, tonnages running from 50 to 500, with an occasional 1000-ton lot, mostly for third quarter shipment. Prices on these grades are pretty firm, Standard No. 2X selling at \$16.50 to \$16.75, delivered, with No. 2 Plain at \$16 to \$16.25, delivered. A few off grade Irons are still available at a slight concession from these figures. There has been a little more business in Southern Iron. Some moderate quantities of No. 2 Iron have been sold on the basis of \$12, Birmingham, and while it is reported that this figure would be shaded by one interest, for prompt shipment, no business is reported at lower figures. The pipe makers are in the market for some fair blocks of low grade Southern Iron, but as yet sellers have not met their views regarding price. Virginia Irons have been a little more active; while some tonnage has been placed in this territory, the bulk of the business has been for Western d

so strongly inclined to do so at the time, and it is believed that with a somewhat further reduction in stocks this will entirely disappear. The decline of 50c. in the price of lake Ore has had no effect on the market, the decline some time ago in the price of Pig having fully discounted the reduction made. Prices are practically stationary. While there is no material change in quotations for delivery in the third quarter, for strictly fourth quarter shipment an advance of 50c. a ton is asked by the large majority of sellers. For delivery in buyers' yards, eastern Pennsylvania and adjoining territory the third quarter of the year, quotations range as follows:

Eastern Pennsylvania, No. 2 X Foundry.	\$16.50 to \$16.75
Eastern Pennsylvania, No. 2 Plain	
Virginia, No. 2 X Foundry	
Virginia, No. 2 Plain	
Gray Forge	
Basic	
Low Phosphorus	21.00 to 21.25

Ferromanganese.—But one sale was reported and that a single carload at \$45, Baltimore. There is little inquiry, and what there was has been confined to small lots. Prices are unchanged, \$45 to \$46, Baltimore, being quoted for early delivaries.

Steel.—The demand has been light. Some small tonnages have been placed for prompt delivery, but no business
of any size has come out. The Ivy Rock plant of the Alan
Wood Iron & Steel Company closed down this week for general repairs. The furnaces went out a week ago and the
blooming mill was shut down this week. The plant will be
idle two or three weeks. Prices of Billets are unchanged.
For delivery in this territory ordinary Rolling Steel is
quoted at \$26.20, with Forging Steel at \$28.20, subject to
the usual extras for high carbons and special sizes.

Plates.—A little more business has been coming out. Small buyers are reported in some instances to be doubling their orders, and this branch of the trade therefore shows improvement. There is more railroad bridge and boat business around, but buyers still hesitate when it comes to placing any large orders, preferring to wait until they are fully satisfied that there will be no further recession in prices. Quotations are firmly maintained and range as follows for deliveries in this territory.

		Parts
	Carload	. carload.
	Cents.	Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox		2.00
Marine		2.20
Locomotive Firebox Steel	2.25	2.30
The above are base prices for 1/4-in, and he	eavier.	The follow-
ing extras apply:		Extra per
		100 lb.
3-16-in. thick		\$0.10
Nos. 7 and 8, B. W. G		15
No. 9, B. W. G		25
Plates over 100 to 110 in		05
Plates over 110 to 115 in		10
Plates over 115 to 120 in		15
Plates over 120 to 125 in		25
Plates over 125 to 130 in		50
Plates over 130 in		1.00

Structural Material.—No particular increase in the volume of business is yet to be noted. There is considerable figuring being done, and it is expected that a fair volume of business will ultimately result. The Pennsylvania Steel Company is understood to have booked an order for some terminal work in New York City, requiring some 1500 tons of Structural Steel. The Lehigh Valley has placed an order for a small bridge with the American Bridge Company, but the bulk of the business placed has been of a small and miscellaneous character. Quotations for delivery in this territory range from 1.75c. to 1.90c.. according to specification.

Sheets—The demand for Sheets, while largely of a day

Sheets.—The demand for Sheets, while largely of a day to day character, aggregates a fair tonnage, and the leading mills are running on full time. Buyers, however, are not anticipating their requirements, orders as a rule being for prompt delivery and individually small. Prices are unchanged, and for mill shipment range as follows, with a tenth extra for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—No increase is to be noted in the demand for Iron Bars. The recent meeting of the Bar Iron Association resulted in the fixing of no definite price, although a base of 1.35c., Pittsburgh, was generally spoken of. This would be equal to 1.50c., delivered, in this territory, but Refined Iron Bars can be pretty freely had at from 1.40c. to 1.45c. The business coming out even at this price is small, and mills continue to operate irregularly. Steel Bars have not been active, and are quoted at 1.55c., delivered, with Rerolled Bars at 1.50c.

Coke.—Somewhat better sales of Foundry Coke are reported, but there is little demand for Furnace Coke. Contracts covering the last half of the year have been made for moderate tonnages of Foundry Coke, at \$2.25, at oven, and while some brands can be had for less, others refuse to do business except at higher figures. Foundry Coke is quoted at \$2.15 to \$2.35, at oven, with Furnace Coke at \$1.50 to \$1.75. For deliveries in this territory the following range of prices is quoted:

Connellsv	ille Furnace	Coke.	 						. \$3.65 to \$3.90	0
Foundry	Coke		 						. 4.30 to 4.50	1
Mountain	Furnace C	oke	 	0	0 0	0	 0	0	. 3.25 to 3.50)
roundry	Coke		 					٠	. 3.90 to 4.10	0

Old Material.—The market shows little activity. Transactions have been confined to small lots, no disposition being shown by the mills to buy in any large quantity, and most of the sales made have been in odd lots. Quotations are practically unchanged, except No. 2 Light Iron, for which dealers refuse to pay over \$7.50 to \$8, the mills in this district being apparently out of the market for this material. Quotations are largely nominal, and range about as follows, for prompt deliveries in buyers' yards, eastern Pennsylvania and nearby:

No. 1 Steel Scrap and Crops\$13.50 to	\$14.00
Low Phosphorus	
Old Steel Axles 18.00 to	
Old Iron Axles 20.00 to	21.00
Old Iron Rails 18.00 to	
Old Car Wheels 13.50 to	
Choice No. 1 R. R. Wrought 15.50 to	
Machinery Cast	
Railroad Malleable 11.75 to	
Wrought Iron Pipe 12.00 to	
New Bundled Sheets 12.00 to	
No. 1 Forge Fire Scrap 11.50 to	
No. 2 Light Iron 7.50 to	
Wrought Turnings 9.50 to	
Stove Plate 11.00 to	
	9.50
Grate Bars 11.75 to	12.25

Pittsburgh.

PARK BUILDING, June 24, 1908.—(By Telegraph.)

Pig Iron.—The Pig Iron market seems to be as quiet as at any time this year. June and July, however, are always dull months, when consumers usually take in as little as possible, and this is the condition just now. Inquiries are only for small lots, for current needs, and while several of the large consumers would probably buy Iron for last half the prices they offer are much below the views of the furnaces. The United Iron & Steel Company started its Fannie Furnace at West Middlesex on Tuesday, and its Cherry Valley furnace at Leetonia is also in operation. We quote Sand Cast Bessemer Iron at \$16 to \$16.25; Basic, \$15.25 to \$15.50, the latter price for fourth quarter; Malleable Bessemer, \$15.25 to \$15.50; No. 2 Foundry, \$15, and Forge, \$14 to \$14.10, all f.o.b. Valley furnace, the freight rate to Pittsburgh being 90c. a ton. We note a sale of 300 tons of Bessemer for prompt delivery to a Wheeling interest on the basis of \$16, Valley furnace; 1000 tons of Basic to a local consumer at \$15.30, Valley furnace; 1000 tons of Forge to a local consumer at \$14.40, Pittsburgh.

Steel.—No new buying is reported in Billets or Sheet Bars, and specifications against old contracts for the latter have fallen off, but on Tin Bars a fair amount of tonnage is being shipped out by the mills. We quote Bessemer and Open Hearth Billets, 3½ in. and larger, up to and including 0.25 carbon, \$25; 0.26 to 0.60 carbon, \$1 extra; over 0.60 carbon, \$2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight or 50c. additional is charged. Sheet and Tin Bars in random lengths are \$27, f.o.b. Pittsburgh. Forging Billets take \$2 advance over Rolling Billets.

(By Mail.)

The Steel trade is showing signs of betterment in some directions, while in others the outlook is not so promising as desired. There is undoubtedly more business being placed in some lines, but there has been a falling off in others. The market is surprisingly firm in prices on the limited trade doing, and predictions of a wide open market after the recent reductions in prices were announced are not being verified. June and July are usually the dullest months in the year in the Steel business. A large number of plants will be closed down on June 30 for the customary stock taking and annual repairs, and for this reason shipments this month are likely to show an increase over May, as the large trade is anxious to get in as much material as possible before the shutdown takes place. The Pig Iron market is quiet, but there has been no decline in prices following the recent reduction of 50c. a ton on Ore. Consumers are buying cautiously. While there is a fair amount of inquiry the actual tonnage being sold is limited and is only for current needs. Several large consumers are willing to buy for the rest of the year, but the prices they offer are below the views of the furnace people, and their offers are usually turned down. The reduction in Billets and Sheet and Tin Bars has not brought an increased new business, nor was this expected. Most large consumers of Steel are covered by special contracts, which are not affected by the recent reduction, and they are not taking in any more Steel than before. Prices of Bessemer and Open Hearth Billets to these concerns for June shipment will be about \$24 or less, so that these consumers are still getting their Steel below the official price, which is \$25, Pittsburgh, plus half the freight rate to destination. The demand for Finished Iron and Steel does not show much increase, but a fair amount of

business is being taken by the mills, Tin Plate, Pipe and Fence Wire being the most active articles on the list. Later information about the tonnage in Steel Bars taken by the mills after the recent reduction of \$4 a ton was made indi-cates that the first estimate, which was 250,000 tons, was too low. We are reliably informed that all of 400,000 tons of Steel Bars have been placed, of which at least 300,000 tons was new business, and about 100,000 tons comes from extensions on old contracts. We can state that reports that Steel Bars rolled from Billets have been sold in the Chicago Steel Bars rolled from Billets have been sold in the Chicago market at prices ranging from 1.20c. up to 1.30c. are absolutely untrue. A limited tonnage in Steel Bars rolled from Old Steel Rails has been sold in the Chicago District at low prices, but the mills making such Bars can only furnish a limited range of sizes and shapes, and they are not desirable, except for certain kinds of work. The actual price of Steel Bars is 1.40c., Pittsburgh, the full freight rate of 18c. to Chicago being charged.

Ferromanganese.—No sales have been made, and inquiries are light. We quote 80 per cent, foreign Ferro at \$44, seaboard, for third quarter, and about \$45, for fourth quarter, the freight rate to Pittsburgh being \$1.95 a ton.

Ferrosilicon.—The recent advance in prices is being

Perrosilion.—The recent advance in prices is being maintained, and we continue to quote 50 per cent. at \$70, Pittsburgh, but do not hear of any sales.

Muck Bar.—The market is stagnant, and prices are merely nominal. Best grades of Muck Bar, made from all Pig Iron, are quoted at \$26, Pittsburgh, but if any business was offering probably a lower price would be made.

Rods.-Little inquiry is coming out, and practically nothing is being sold. We quote Bessemer Rods at \$33, Basic at \$34, and Chain Rods at \$33, f.o.b. Pittsburgh.

Skelp .- The mills will close down June 30, for inventory and repairs. Prices are largely nominal, in the absence of business, and we quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh. and repairs. business, and

Steel Rails.—The Carnegie Steel Company has received specifications from the Erie Railroad on an old contract for about 7500 tons of Standard Sections, and has sold about 2000 tons of Light Rails, made up of domestic and export orders. The demand for Light Rails has been fairly good this month, that company having booked upward of 5000 tons. Its No. 3 mill, at Edgar Thomson, which has been closed for some time for lack of orders, will likely resume within 10 days or two weeks. Nos. 1 and 2 mills, which roll Standard Sections, are still in operation to about 35 or 40 per cent. of capacity. The reported inquiry from Russia for 1,000,000 tons of Rails to be used in double tracking the Manchurian Railroad never had any basis in fact. The Steel works in Russia that roll Rails have been putting themselves in shape for some time to take care of any home Steel Rails.-The Carnegie Steel Company has received Steel works in Russia that roll Rails have been putting themselves in shape for some time to take care of any home demand that may come up. Regular quotations on Light Rails, which are shaded \$4 to \$5 a ton to meet competition of mills that reroll Rails, are as follows: 25 to 45 lb. Sections, \$28; 20-lb., \$29; 16-lb., \$30, and 12-lb., \$32. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—New business in Plates is still confined to small lots for current needs. The recent reduction to 1.60c. on Plates does not represent the bottom of the market, as a few mills are shading this price from \$1 to \$1.50 a ton. Regular prices are as follows: Tank Plates, ¾-in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

		Extra pe
	Gauges lighter than 1/4-in. to and including 3-16-in	1.
	Plates on thin edges	. \$0.10
	Gauges Nos. 7 and 8	15
	Gauge No. 9	. 25
	Plates over 100 to 110 in	. 05
	Plates over 110 to 115 in	10
	Plates over 115 to 120 in	15
	Plates over 120 to 125 in	25
	Plates over 125 to 130 in	50
	Plates over 130 in	1.00
	All sketches (excepting straight taper Plates vary	. 1.00
	an sketches (excepting straight taper Plates var)	7-
	ing not more than 4 in. in width at ends, nar	-
	rowest end being not less than 30 in.)	10
	Complete Circles	20
	Boiler and Flange Steel Plates	10
	"A. B. M. A." and ordinary Firebox Steel Plates.	20
	Still Bottom Steel	30
	Marino Steel	40
	Shell grade of Steel is abandoned.	
_	Second of today in mountained.	

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b.

Pittsburgh, with all rail tariff rate of freight to destination
added, no reduction for rectangular shapes, 14 in. wide down to
6 in. of Tank. Ship or Bridge quality.

Structural Material .- The only local work of moment Structural Material.—The only local work of moment in sight comprises the Horne Building, about 2500 tons, and the First National Bank Building, about 1000 tons, but neither of these jobs has been placed. The Structural mills are operating at present to about 40 to 50 per cent. of capacity. We quote: Beams and Channels, up to 15 in., 1.60c.; over 15 in., 1.70c.; Angles, 3 x 2 x ½ in. thick, up to 6 x 6 in., 1.60c.; 8 x 8 and 7 x 3½ in., 1.70c.; Zees, 3 in. and larger, 1.60c.; Bulb Angles and Deck Beams, 1.90c. Under the Steel Bar card,

Angles, Channels and Tees under 3 in. are 1.50c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets .- As far as new demand is concerned, the Sheet trade is in rather unsatisfactory condition, but we are advised that prices, as reaffirmed at the recent meeting in this city, are being fairly well maintained. The American Sheet & Tin Plate Company is operating about 40 per cent. of its & Tin Plate Company is operating about 40 per cent. of its Sheet capacity, and the outside mills are doing about equally as well. Regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, and Galvanized Roofing Sheets of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Not much new business is being placed, but

Tin Plate.—Not much new business is being placed, but the Tin Plate mills have a fair amount booked for forward delivery. The American Sheet & Tin Plate Company and the leading independent Tin Plate mills are able to operate to nearly full capacity. We quote at \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Contracts have been adjusted to meet the lower prices, and a fair amount of tonnage is being specified for against these contracts, but practically no new business is being placed. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—As noted above, it is now stated that the actual amount of business in new orders and in extensions to old contracts placed in Steel Bars will aggregate fully 400,000 tons. One leading Steel Bar interest has booked close to 150,000 tons, another has taken about the same and fully 100,000 tons have been divided up between the smaller Steel Bar interests. The price of 1.40c., Pittshurgh on Steel Bars is being maintained in suite of reports burgh, on Steel Bars is being maintained in spite of reports of sales as low as 1.20c., in the Chicago District. That price was made on Steel Bars rolled from old Rails, which price was made on Steel Bars rolled from old Rails, which never command as high a price as Bars rolled from Billets. The price of Steel Bars rolled from Old Steel Rails is now 1.35c., Chicago, and this is being maintained. A limited business in Iron Bars is being placed, some former consumers of Iron Bars having gone over to Steel Bars owing to the slight difference in prices in the two grades. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel—Inquiries are more numerous, and

Merchant Steel.—Inquiries are more numerous, and the amount of business being placed is probably larger, but has not increased to the extent expected when the recent reduction in prices was made. The most active article is Tire Steel, for which some fair sized orders have recently been booked. The demand for Shafting is very dull, and is been booked. The demand for Shafting is very dull, and is confined to scattering orders for small lots for current needs. We quote: Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

Railroad Spikes.—Railroad Spike orders taken this

Railroad Spikes.—Railroad Spike orders taken this year make a sorry showing as compared with the first half of last year. The railroads are not buying and the demand is almost stagnant. The demand for the smaller sizes is mostly for current needs. We quote: Standard sizes, 4½ x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb for less than carload for h. Pittsburgh. lb. for less than carload, f.o.b. Pittsburgh.

Spelter.—It is said that consumption is much below one-half what it should be, and the market is weak. We quote prime grades of Western Spelter at about 4.30c., East St. Louis, equal to 4.42\(\frac{1}{2}\)c., Pittsburgh. If any business was offering, possibly 4.25c., St. Louis, could be done.

Merchant Pipe.—Reports that the Youngstown Sheet & Tube Company had taken large orders for line Pipe for shipment to the Pacific Coast, which would keep its Pipe mills in full operation for the next 12 months, are absolutely untrue, and have caused some annoyance to that company. A moderate amount of business is being placed, jobbers buy-

ing to replenish broken stocks when necessary, but there is no disposition to anticipate future requirements. In a general way, the Pipe mills are operating to probably 50 per cent. of capacity and the actual new orders entered each month show a slight increase over the previous month. Discounts on Steel Pipe, ¾ to 6-in., to the large trade are now 76 and 5 per cent. off list. Regular discounts are as follows:

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																														1	Black.	Galv.	
1/6	to	1,	1	in	١.																										67	51	
8/8	in.																			0								0	0		69	55	
1/2	in.				0		0		0		0		0		0	0				9		0	90	0			۰				71	59	
%																															75	65	
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1/2	to	8	11	n.																						0					56	45	

Discounts on Genuine Iron Pipe are as follows:

																															-	Black.	Galv.
1/8																																. 65	
3/4	in									۰		٠		۰	9						۰		٠			٠	۰					. 67	53
1/9	in.																		٠													. 69	57
3/4	to	6	in																											ì		. 73	57 63
7																																.70	55
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1/9																																.65	53
41	6 to																															.61	49
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1/2	to	8	in								0										9											.54	43

Boiler Tubes.—Only small lots for current needs are being placed, and prices are more or less uneven. The railroads are buying practically no Tubes. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, but which discounts are being shaded, are as follows:

Railer Tubes.

		teel.
1 to 1½ in	42	47
1% to 2% in	42	59
21/6 in	47	61
2% to 5 in	52	65
6 to 13 in	42	59
21/2 in. and smaller, over 18 ft. long, 10 per		ra.
2% in. and larger, over 22 ft. long, 10 per co	ent. net extr	a.

Iron and Steel Scrap.—Some inquiry is in the market for Low Phosphorus Scrap, and negotiations involving 4000 to 5000 tons are under way. The market on this grade of Scrap has improved materially recently, and it is now held as high as \$18.50, Pittsburgh, if the Phosphorus and Sulphur are guaranteed 0.04, or under. The general demand for Scrap is quiet, which is natural in view of the shutdown of a number of mills on June 30 for annual inventory and repairs. In spite of the rather light demand, prices are fairly strong, and it is believed will be better early in July, when an increased demand is expected. We quote per gross ton, Heavy Steel Scrap, Pittsburgh, Steubenville and Sharon delivery, \$13.25 to \$13.50; Cast Iron Borings, \$7 to \$7.25; No. 1 Railroad Wrought Scrap, \$13.50 to \$13.75; No. 1 Cast, \$14 to \$14.25; Bundled Sheet Scrap, \$9.25 to \$9.50 at shipping point; Sheet Bar Crop Ends, \$17.25 to \$17.50; No. 1 Busheling Scrap, \$12.75 to \$13; No. 2, \$8.75 to \$9; Iron Axles, \$19 to \$19.50; Steel Axles, \$17.50 to \$18; Low Phosphorus Melting Stock, 0.04 and under, \$18; Old Steel Rails, short pieces for melting purposes, \$13.25 to \$13.50; Rerolling Rails, \$14.50 to \$15; Machine Shop Turnings, \$8.25 to \$8.50; Grate Bars, \$12 to \$12.25; Railroad Malleable Scrap, \$11.50 to \$12, all f.o.b. Pittsburgh.

Coke.—We can report a slight increase in the demand for Furnace Coke, and more ovens in the Connellsville region have been put in operation. The W. J. Rainey Coke Company will start this and next week upward of 1000 ovens, and the Washington Coal & Coke Company has started up 150 more ovens. Prices on Furnace Coke are firmer, and strictly Connellsville for prompt shipment is held at \$1.60 a ton, at oven, while on contracts for last half of the year \$1.85 to \$1.90 is quoted. Strictly Connellsville Foundry Coke for second half of the year delivery is held at \$2.25, at oven, but other grades made outside of the Connellsville region are being offered at \$2 or lower. The output of Coke in the Upper and Lower Connellsville regions last week was 162,947 tons, an increase over the previous week of about 7000 tons.

The Continental Steel & Supply Company, 409 Fulton Building. Pittsburgh, was recently formed by Ira E. Bixler and C. T. Heron. Mr. Bixler is president of the Bixler Coal & Coke Company, which has adjoining offices. Mr. Heron was formerly with the purchasing department of the Westinghouse Machine Company. The new company will represent the J. D. Smith Foundry Supply Company, Cleveland, on foundry supplies and the McGinness Steel Company, Corry. Pa., on Tool Steel, and will also do a business in Cement Coated Nails, Sheets, Iron Bars, &c.

Cleveland.

CLEVELAND, OHIO, June 23, 1908.

Iron Ore.—Sales are still light, the reduction in price not having started an active buying movement. Sales reported the past week aggregate in the neighborhood of 600,000 tons. Prices remain firm at the new basis, and it is believed that they will be maintained for the season. The long time contracts of a number of consumers expire this year and these consumers, who have been getting their Ore at lower prices than those now prevailing will be compelled to come into the market and buy at the present prices. The majority of these long time contracts were made for 10 years. Some chartering of vessel tonnage has been done at 5c. a ton under last year's rate. This fixes the present rate, although it is possible that it will not keep up all the season. The rate per ton as it now stands is 70c. from the head of the lakes, 65c. from Marquette and 55c. from Escanaba. All the Ore firms that operate their own boats now have some of their vessels in commission, but the movement is still light and, owing to the light sales, it is not expected to increase materially before July. Shippers are hoping for an early increase in the movement so that they can reduce their stock piles at the mines. The movement of last years's Ore from the Lake Erie docks is still light. Ore prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The only sales reported are a few small lots of Foundry Iron ranging from carloads to 300 and 400 tons. Nearly all the consumers in this territory are now covered for at least a portion of their requirements for the last half. Good inquiries for Foundry Iron have come from Eastern consumers, including one for 5000 tons from an implement maker, but some of them are believed to be mainly for the purpose of testing the market. The high freight rate will prevent Ohio furnaces from competing for this tonnage. Prices remain firm at the same level that has prevailed for the past month. We quote No. 2 Foundry Iron at \$15 to \$15.25, Valley furnace, for the last half. Local furnaces quote the same Iron at \$15.50 to \$15.75, at furnace. The melt in this territory shows some improvement, and shipping orders are coming in slightly better. The Southern Iron market is lifeless, and the same condition prevails regarding Basic, Bessemer and Malleable Iron. The Malleable melt has not improved materially, and consumers are slow in taking Iron on contract. For prompt shipment and for the last half we quote, delivered, Cleveland, as follows:

Coke.—The market is quiet, although some sales of Foundry Coke are reported. Prices remain firm for future delivery. Foundry Coke for spot shipment is bringing low prices, sales of high grade Coke being reported at \$2 and lower, at oven. For future delivery we quote Connellsville Furnace. Coke at \$1.75 to \$1.85, at oven, and 72-hr. Foundry Coke at \$2.25 to \$2.35. at oven.

lower, at oven. For future delivery we quote Connellsville Furnace. Coke at \$1.75 to \$1.85, at oven, and 72-hr. Foundry Coke at \$2.25 to \$2.35, at oven.

Finished Iron and Steel.—The demand for both Iron and Steel Bars shows some improvement, but otherwise the condition of the market remains about stationary. Some further contracts have been closed by the implement makers for Steel Bars for the year beginning July 1, and the majority of these interests in this territory are now under contract for the year. Few other consumers of Bars are making contracts. Their crders are for small lots for immediate requirements, but the tonnage placed shows that the actual consumption has increased as compared with the past few months. To the slight improvement in business activity, rather than to the price reduction, is attributed this improvement in the demand. The demand for Plates in car lots and under is slightly better, a few orders coming from consumers that have been out of the market for several months. The Structural situation shows no change. The demand is still very light, the price reduction not having a stimulating effect. Bids will be received this week for a local store building, which will require about 1200 tons of Structural Steel. The proprietors of another local store, who have had additions under consideration for some time, have decided to carry out their plans for a new 10-story building, on which work will be started in a few months. No other local work is in sight requiring much tonnage of Structural Material. The Board of Public Service will receive bids June 27 for 3400 tons of Iron Pipe and 240 tons of miscellaneous and special castings for the Cleveland Water Works Department. Bar contracts closed with implement makers during the week, aggregate about 10,000 tons, and include one order for 1000 tons of Hard Steel Bars. While there are occasional reports of cutting by a few of the smaller mills, prices are being firmly maintained by the leading producers on all lines of Finished Material. The dema

1.70c., base, Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed; No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c. Beams and Channels out of stock are 2c., and Plates, 4-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Boiler Tubes, 23/4 to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, 71 per cent. discount.

Old Material.—The market remains quiet. Prices are n, the recent advance being maintained. The demand is firm, the recent advance being maintained. The demand is light. The increase in the demand that was expected a week or two ago has not appeared, and the only sales reported are small lots for immediate needs. No contracts are being made for future delivery. There are some inquiries for fair tonnages, but dealers and consumers are unable to come together on prices, the former holding firmly to the present prices, which the latter are unwilling to pay. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, which are unchanged, are as follows:

The second secon	
Old Steel Rails	\$13.00 to \$13.50
Old Iron Rails	15.00 to 16.00
Steel Car Axles	
Old Car Wheels	
Relaying Wheels, 50 lb. and over	
Heavy Melting Steel	
Railroad Malleable	
Agricultural Malleable	
Light Bundled Sheet Scrap	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles\$16.00	to	\$16.50
Cast Borings 6.00		
Iron and Steel Turnings and Drillings 7.00	to	
Steel Axle Turnings 8.50		
No. 1 Busheling 11.00		11.50
No. 1 Railroad Wrought 12.00	to	13.00
No. 1 Cast 11.50		
Stove Plate 9.50		
Bundled Tin Scrap 8.00	to	9.00

Bialosky Bros. & Co., Scrap Iron and Steel, Cleveland, Ohio, announce the withdrawal of L. Bialosky from the firm. The business will be carried on as heretofore by J., S. J. and I. Bialosky.

St. Louis.

St. Louis, Mo., June 22, 1908.

The consensus of opinion among sales managers, both The consensus of opinion among sales managers, both of St. Louis manufacturers and the local representatives of outside interests, is that a gradual improvement is in evidence. The railroads are beginning to buy material for putting their equipment, as regards idle cars and engines in shape to handle fall business. There has been quite a large tonnage of Steel Bars sold for the manufacture of agricultural implements, and manufacturers are asking for shipments to be made in anticipation of contracts. Forgings and Structural Material are in better demand. Structural and Structural Material are in better demand. Stove manufacturers report their salesmen advising that country dealers are buying freely for fall delivery. There is a seasonable demand for Wire.

Coke.—The market for Coke shows indications of increasing activity. There is an inquiry out for 1300 cars of Connellsville, the contract to cover from July to July. Price still rules at \$2.15 to \$2.50, at oven, with upward tendency.

still rules at \$2.15 to \$2.50, at oven, with upward tendency. Pig Iron.—Buying of Pig Iron is for the present confined to small lots for prompt shipment. Most consumers are either carrying over stock or are so well supplied in nearby deliveries they are not buying. Owing to the concession of 50c. per ton in Northern Ore, some buyers look for a corresponding allowance. Reports from Birmingham, however, indicate that, with one exception, the whole district is sold up for the third quarter. There is quite general inquiry for Iron into the first quarter of next year. A better inquiry is reported for High Silicon Iron. No. 2, or Soft Foundry, for shipment over last half, is ruling at \$12.50, Birmingham, and with some furnaces for all deliveries, while a few others are quoting \$12 for third quarter and \$12.50 for last quarter. \$12.50 for last quarter.

Structural Material and Rails.—A large inquiry is reported for Structural Material, principally for small jobs, mainly from the Southwest, both in building and bridge work. An improvement is noted in the demand for Rails.

Metals.—Spelter is in good demand, and firm at 4.45c. 4.47%c. Antimony is off 10c., and Tin is weaker.

Old Material.—The situation remains practically unchanged. As the demand from the mills is small, such movement as obtains comes from dealers. The only offering of consequence from railroads is 250 tons by the Vandalia. Dealers' prices to the trade, per gross ton, f.o.b. St. Louis, are as follows:

ď	tto actions		
	Old Iron Rails	\$14.00 to	\$14.50
	Old Steel Rails, rerolling	11.25 to	11.50
	Old Steel Rails, less than 3 ft	11.00 to	11.25
	Relaying Rails, standard sections, sub-		,
	ject to inspection	22.50 to	23.50
	Old Car Wheels	11.50 to	12.00
	Heavy Melting Steel Scrap	10.75 to	11.00
	Frogs, Switches and Guards, cut apart.	10.50 to	11.00
	Mixed Steel	9.00 to	9.50

The following quotations are per net ton:

Iron Fish Plates	00
No. 1 Railroad Wrought 10.75 to 11.	
No. 2 Railroad Wrought 8.50 to 10.	00
Railway Springs 9.00 to 10	00
Locomotive Tires, smooth 12.00 to 12.	50
No. 1 Dealers' Forge 9.50 to 10.	00
	75
	00
No. 1 Cast Scrap 10.00 to 10.	50
Stove Plate and Light Cast Scrap 9.00 to 9.	50
Railroad Malleable 9.25 to 9.	75
	00
	50

The Bethlehem Steel Company reports closing contract with a Kansas City contractor for Steel Material for the State University Building, at Columbia, Mo., and also for a small office building in St. Louis.

The Missouri Pacific Railroad has placed a contract with the American Car & Foundry Company for the repair of 1000 cars, and it is reported that the Mobile & Ohio has contracted with the same company for the repair of cars.

tracted with the same company for the repair of cars.

A large local Zinc company reports a good demand for its product, particularly for galvanizing purposes.

The Commonwealth Steel Company is running moderately; in fact, it shut down but one month this year.

The American Metal Company reports the demand improving, and the Hoyt Metal Company states that Lead for corroding is in good request.

The Crucible Steel Company of America, manufacturer of Tool Steel, is in receipt of a good many small orders, but there is not much demand from parties who supply railroads. roads

roads.

The Hoyt Metal Company has recently been incorporated under the same style; capital stock, fully paid, \$250,000.

The Stewart Supply Company, in which James Stewart & Co. and other leading contractors of the city are interested, has recently been incorporated, and will build a plant to cost upward of \$100,000, at Grey Summit, Mo., for mining sand for glass and other industries.

The Meramac Land, Labor, Supply & Maintenance Company has been incorporated to build at Sherman, Mo., homes for the new cement company. Ultimately an investment of

for the new cement company. \$200,000 will be made. Ultimately an investment of

The Handlan-Buck Mfg. Company states that it is filling up its warehouses with material in anticipation of a good fall business.

Birmingham.

BIRMINGHAM, ALA., June 22, 1908.

Pig Iron.—There have been no developments within the past week that have changed the status of the market. All parties concerned are apparently satisfied with the situation as presented, and willing to await further developments before increasing the proportions of their commitments. There has been an improvement in general lines of foundry trades. as is indicated by the aggregate of recent sales for prompt delivery, but purchasers are not disposed to engage additional tonnage for anticipated requirements, and the demand is expected to increase in proportions similar to the actual increase in the melt. Producers continue to discourage negotiations for advanced deliveries by adhering to prohibitive quotations without evidence that their attitude would be changed unless the demand for such deliveries was stimulated changed unless the demand for such deliveries was stimulated materially. It is generally conceded that the tonnage available for prompt deliveries and the third quarter is now practically in the hands of one concern, and notwithstanding the fact that the rate of production will be increased within a few weeks, indications are not unfavorable for advanced quotations on the surplus tonnage. In this connection, however, the fact that the tonnage engaged has so far been delivered according to specifications and the likelihood of reever, the fact that the tonnage engaged has so far been delivered according to specifications and the likelihood of requirements having been over-estimated, thereby resulting in shipments being withheld, should not be overlooked. Among the sales reported for the week, a lot of 200 tons of No. 2 Foundry for prompt delivery, at \$12, Birmingham, is the most significant. A number of carload lots are reported at \$12, as well as lots of less than 100 tons. The sale of 200 tons of Gray Forge for shipment in July and August is reported at \$10.75 per ton, Birmingham. The scarcity of low grades is somewhat a feature and has resulted in the reported at \$10.75 per ton, Birmingham. The scarcity of low grades is somewhat a feature and has resulted in the usual differential in quotations being reduced by practically all producers.

Cast Iron Pipe.—The appearance of additional strength in other markets is not without a salutary effect on conditions in the South. The business recently developed has contions in the South. The business recently developed has consisted principally of small orders, but all concerns have manifested less disposition to shade quotations, and prices are on a much firmer basis. It is estimated that orders of 200 to 600 tons each that are now in sight aggregate approximately 36,000 tons. Of this tonnage a significant proportion is for export, consisting principally of large sizes. The fact that financial arrangements have recently been perfected for the construction of another plant is probably the best index offered as to the status of the Pipe trade. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., \$23; 8 in. to 12 in., \$22; over 12-in., average, \$21, with \$1 per ton extra for Gas Pipe. These quotations are probably shaded for large municipal contracts.

Old Material.—The anticipated improvement in the demand has so far failed to materialize, but dealers are still indisposed to force matters by concessions in prices. In the absence of evidence to the contrary, prices have been maintained, but the volume of business transacted hardly indicates a market, and nominal quotations only are warranted. We quote nominally as follows, per gross ton, f.o.b. cars here:

Old	Iron	Rails.											 \$15.00	to	\$15.50
Old	Iron	Axles.									 0		 14.00	to	15.00
													12.50		
													12.00		
													9.00		
No.	1 Cor	intry	Wro	ugh	it.					0 1			 10.50	to	
No.	2 Cor	untry	Wro	ugl	it.				0		 0		 9.50	to	10.00
No.	1 Ma	chine	Y										 10.00	to	
No.	1 Ste	el						0	0				 9.50	to	10.00
Wro	ught	Pipe :	and	Fl	ues	3.									9.00
Stov	e Pla	te and	Li	ght	Ct	as	t.					0	 8.50	to	
Cast	Bor	ings											 5.00	to	5.50

Cincinnati.

CINCINNATI, OHIO, June 24, 1908.—(By Telegraph.)

Late developments in the local Iron and Steel markets do not give any great encouragement to those who have expressed a belief that the year's second half would mark the beginning of a permanent improvement. There is little doing in the Pig Iron sales offices, and the hot wave now enveloping the Central West seems to have stifled inquiries and sales of all kinds alike. Indications of activity are, however, noted in or about the three idle local plants, namely, the Steel Foundry, the Weber Iron Foundry and the Licking Rolling Mill. The last is expected to be rolling Iron Bars within 30 days. There is said to be an offer on the Steel Foundry which is under consideration, and parties are making inquiries about the Weber Foundry. Buyers have responded but meagerly to the promise held forth in published price reductions on finished lines. While there is a healthier undertone in Pig Iron inquiries, the ruling price of \$12, Birmingham, for No. 2 Foundry, applied to spot business, shows weakness. Reports from interior manufacturing points indicate that the holding off policy is still in vogue, and railroad purchasing agents are not yet ready to put up anything definite to tool manufacturers for figures.

Pig Iron.—No change is to be noted in the prices of

Pig Iron.—No change is to be noted in the prices of either the Northern or Southern product this week, save that some furnaces which were firm at an advance of 25c, to 50c, over the ruling market price, have apparently receded from their position. It is persistently reported that the Southern price of \$12 has been shaded a trifle for prompt shipments and for cash. On the other hand, the disinclination to take on business for fourth quarter delivery at that price is quite confirmed. There has been a little movement of low grades, and the price of Grey Forge is given all the way from \$10.50 to \$11, Birmingham, and No. 4 Foundry is subject to negotiation. Ohio Silveries, 8 per cent., are still quotable at \$18.50, at furnace. The new furnace of the Jackson County Iron & Steel Company is now announced as to be blown in about August 1, and will manufacture High Silicons, with a capacity of 75 tons a day. Northern Foundry Irons have shown the greater weakness of the week, and the same wide range in prices still exists, namely, \$15 to \$16, with the tendency toward the lower price. The largest inquiry noted to-day is for 2000 tons, divided 1000 Northern, 500 Southern, and 500 Silvery, for Michigan delivery, August to October. A number of inquiries for 200 to 300 ton lots for nearby delivery are in the hands of leading agencies, and mostly for Foundry Iron. An Indiana melter asks for 200 tons of No. 3 Foundry for the third quarter. A St. Louis manufacturer wants 500 tons of No. 2 Foundry for the third quarter, and a local foundry is asking a price on 200 tons of Foundry for third quarter delivery. There is a good inquiry from Chicago territory, one manufacturer wanting 2000 tons analyzing 2 per cent. Silicon for immediate use. For early delivery and balance of the year we quote, f.o.b. Cincinnati, as follows, the freight rate being \$3.25 from Birmingham, and \$1.20 from the Hanging Rock District:

Southern Coke, No. 1\$15.75 to \$16.	25
Southern Coke, No. 2 15.25 to 15.	75
Southern Coke, No. 3 14.75 to 15.	
Southern Coke, No. 4 14.25 to 14.	
Southern Coke, No. 1 Soft 15.75 to 16.	
Southern Coke, No. 2 Soft 15.25 to 15.	
Southern Coke, Gray Forge 13.75 to 14.	
Ohio Silvery, 8 per cent. Silicon 19.	
Lake Superior Coke, No. 1 16.70 to 17.	
Lake Superior Coke, No. 2 16.20 to 17.	
Lake Superior Coke, No. 3 15.70 to 16.	
Standard Southern Car Wheel 22.25 to 22.	
Lake Superior Car Wheel 21.75 to 22.	25

(By Mail.)

Coke.—Unwillingness to contract beyond the close of the year at ruling prices has affected somewhat a Coke market that otherwise looks quite promising to local sellers. Consumers contracted for their requirements for the balance of the year, as a rule. several weeks ago; and with the continued uncertainty as to the foundry melt, the market at this writing cannot be said to be brisk, although prices are firm. Connellsville Furnace Coke is quotable in this market at \$1.75 to \$1.90, and Foundry about \$2.25 to \$2.40, at oven, on forward deliveries. The contract price on Pocahontas Furnace is about \$1.75 to \$1.85. The Wise County product is selling at \$2 to \$2.25 for Foundry Grades and \$1.60 to \$1.75 for Furnace; New River Foundry \$2.65 to \$3, and Furnace Grades about \$2.50.

Finished Iron and Steel.—No change is noted in jobbing and retail circles in this territory on Finished Material and store prices are being well maintained for such business as is going. If any improvement is noted at all, it is confined to Iron and Steel Bars, some little demand for which is coming out, but the inquiry is still a long way from normal. Dealers are not enthusiastic over the prospect and the majority are not looking for any permanent improvement before the first of the year, if then. Orders from store stocks are filled at the following prices, which are f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras. Steel Plates, carload lots, 1.75c., base, half extras; small lots from store, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼ in. and heavier, carload lots, 1.85c.; small lots from store, 2.50c. No. 16, carload lots, 2.05c.; small lots from store, 2.50c. No. 16, carload lots, 2.05c.; small lots from store, 2.20c. No. 12, carload lots, 1.95c.; small lots from store, 2.20c. No. 12, carload lots, 2.6; small lots from store, 2.30c. Sheets (Light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. and heavier, carload lots, 1.95c. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—The local Scrap market has lapsed into its accustomed state of inactivity, and beyond some interesting inquiries from mills and dealers in other sections the situation has not improved. Prices are unchanged, but are a little firmer in tone. There is hope in some quarters of an early advance, but it is based rather on expectancy than on actual conditions to warrant it. Dealers' prices to the trade, f.o,b. cars, Cincinnati, are about as follows:

No. 1 R. R. Wrought, net ton	10.50 t	o \$11.50
Cast Borings, net ton	4.00 t	0 5.00
Heavy Melting Steel Scrap	11.00 t	
	5.00 t	
No. 1 Cast Scrap, net ton		
Burnt Cast and Wrought, net ton	8.00 t	0 9.00
Old Iron Axles, net ton	14.50 t	0 15.50
Old Iron Rails, gross ton	13.00 t	o 14.00
Old Steel Rails, long, gross ton	11.00 t	o 12.00
Old Steel Rails, short, gross ton	11.00 t	0 12.00
Relaying Rails, 56 lb. and up, gross ton.	22.00 t	
Old Car Wheels, gross ton	12.00 t	o 13.00
Low Phosphorus Scrap, gross ton	13.00 t	o 14.00

The Wisconsin Steel Company, Chicago, has established an office in Cincinnati, and placed Maynard French & Co. in charge, with headquarters in the First National Bank Building. The company's principal products are steel bars, angles and small shapes. Mr. French was for some years connected with W. H. D. Totten, Cincinnati.

The Writ of Injunction.-Justice Brewer of the Supreme Court of the United States, in an address at Clark University, at Worcester, Mass., said that the restraining power of the court of equity should be enlarged and not diminished, and that to restrict this power would be a "step backward toward barbarism." He believes in prevention more than penalty. He says: "As population becomes more and more dense and activities increase, the restraining power of the equity court is worth vastly more than the punishing power of the criminal court." He would enlarge the restraining power and improve the judiciary, "until all the people will be assured that the power is only used when necessity requires and the restraint imposed only when justice demands." Somehow, says the New York Journal of Commerce, this position of the jurist seems more reasonable than that of the labor autocrat.

A hydro-electric plant on Black River, Wis., near Black River Falls, is in contemplation by the La Crosse Water Power Company, La Crosse, Wis., which has just finished building a similar plant at Hatfield. The new project has in view the development of about 10,000 hp. Although some preliminary work is now being done, it is not expected that preparations for actual construction will be made until next year.

New York.

NEW YORK, June 24, 1908.

Some transactions of some importance have Pig Iron. the been closed, which were in suspense, pending final action by the buyers. Among these were one lot of 12,000 tons, for New England, and one lot of 1500 tons. Another large interest which has been in the market for some weeks for nutrest which has been in the market for some weeks for upward of 7000 tons has not yet closed. Competition continues as keen, and close prices are being made. We quote, at tidewater, Northern No. 1 Foundry, \$16.75 to \$17; No. 2 Foundry, \$16 to \$16.50, and No. 2 Plain, \$15.25 to \$15.50. Alabama Irons are quoted \$16.75 to \$17, for No. 1, and \$16.25 to \$16.75, for No. 2 Foundry.

Structural Material.—Bids went in on Monday on the Educational Building at Albany, to be erected by the State of New York, involving 10,300 tons of Steel. This is the largest Structural contract in sight at present. Quite a number of small contracts have lately been closed in this vicinity. The largest of these was 700 tons for a building, sevicinity. The largest of these was 700 tons for a building, secured by the Cambria Steel Company. Other contracts for buildings and viaduct work, ranging from 300 to 500 tons, were taken by the Eastern Steel Company, the J. B. & J. M. Cornell Company, and the McClintic-Marshall Construction Company. In every instance the bids showed that fabricators are still competing sharply. While this is the case, the prices made by the successful bidders were somewhat higher than those recently named, indicating that some progress is being made toward a better range of values. The American Bridge Company received an order for several hundred tons from the made toward a better range of values. The American Bridge Company received an order for several hundred tons from the Boston Elevated. Steel manufacturers report an improving demand for plain material, indicating that consumers gendemand for plain material, indicating that consumers generally are not withholding their orders in the expectation of lower prices. Quotations on tidewater deliveries, mill shipments, are as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2½c.

Bars.—The Eastern Bar Iron manufacturers held a meeting in this city on Thursday of last week, which was without result, and no concerted attempt is now being made to maintain prices. Bar Iron and Steel Bars are in moderate demand, with orders seldom running larger than for

erate demand, with orders seldom running larger than for carloads. Quotations range from 1.41c. to 1.46c., tidewater, on Bar Iron and 1.56c., tidewater, on Steel Bars.

Plates .- Some little demand is noted for Plates for re-Plates.—Some little demand is noted for Plates for repair work, but the market still waits the general resumption of buying by railroads to stimulate business. Prices of standard sizes of Plates are as follows at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Cast Iron Pipe.—M. J. Drummond & Co. secured a contract for 3100 tons of the Pipe required for the city of New York, mainly 16 and 20 in. This lot of Pipe has been New York, mainly 16 and 20 in. This lot of Pipe has been erroneously reported to have been awarded to other interests. The city of New York will purchase 2800 tons of 6 and 12 in. in about two weeks. Carload orders for 4 to 8 in. are fairly numerous and the foundries in this territory are getting better filled with small sizes. Carload lots of 6-in. are held at \$24.50 to \$25 per net ton at tidewater.

Old Material.—The foundries are buying in moderate quantities, and some of the rolling mills have been in the market for various grades of stock. The demand has consequently been quite fair for Cast Scrap, Stove Plate, Wrought Pipe and Borings and Turnings. No. 1 Railroad Wrought has also shown a better movement. Car Wheels are still being picked up by dealers. The market for Steel Scrap is quiet, with prices slightly lower. Quotations are about as follows, per gross ton, New York City:

Old Girder and T Rails for melting	10.00 to	11.00	
Heavy Melting Steel Scrap	10.00 to	11.00	
Old Steel Rails, rerolling lengths	11.50 to	12.00	
Relaying Rails	20.50 to	21.50	
Old Iron Rails	14.50 to	15.00	
Standard Hammered Iron Car Axles	16.00 to	16.50	
Old Steel Car Axles	14.50 to	15.00	
No. 1 Railroad Wrought	13.00 to	13.50	
Iron Track Scrap	10.00 to	10.50	
No. 1 Yard Wrought, long	11.00 to	11.50	
No. 1 Yard Wrought, short	10.00 to	10.50	
Light Iron	5.50 to		
Cast Borings	5.00 to		
Wrought Turnings	6.50 to		
Wrought Pipe	9.50 to	10.00	
Old Car Wheels	12.50 to	13.50	
No. 1 Heavy Cast, broken up	13.00 to	14.00	
Stove Plate	9.50 to	10.50	
Locomotive Caste Daws	10.50 to	11.00	
Locomotive Grate Bars			
Malleable Cast	11.50 to	12.50	

Representatives of the Western Bar Iron Association and the Amalgamated Association will meet in Detroit July 7 to endeavor to effect a scale settlement, as follows: For the Western Bar Iron Association, S. J. Llewellyn, W. A. Meyers and J. E. Kreps; for the Amalgamated Association, P. J. McArdle, Elias Jenkins and Richard Fitzgerald.

Metal Market.

NEW YORK, June 24, 1908.

Pig Tin.—Trade has been duller even than last week. The volume of business is as small as during November and December, but confidence prevails that after the summer season there will be more activity. The ability of the London market to withstand, so well, the heavy arrivals from the Straits, a maximum for any one month, is considered reassuring. Price changes during the week have been as follows: as follows:

																			Cents.
																			. 27.90
																			.28.00
																			.27.80
																			.27.75
June	24.																		.27.60

Arrivals so far this month are 2742 tons, and there are afloat 2487 tons. The London market closes at £125 15s. for spot, and £126 7s. 6d. for futures.

Copper.—The market here is a shade firmer, but in Europe a trifle easier. Lake cannot be had at less than 13c., and small lots, at least, of Electrolytic, are held at 12.87½c., net cash. Some appear to think that a round order for prompt Electrolytic would be accepted at 12.75c. Inquiries for late second half deliveries are more numerous. The interests of second hair deliveries are more numerous. The interests of the Copper trade would probably be best served by as few fluctuations in price as possible, during the rest of this year at least. Exports for the month are good, amounting to 21,000 tons, up to June 22. The London market is about £1 lower than last week, at £57 7s. 6d. for spot, and £58 2s. 6d for futures. 2s. 6d. for futures.

Pig Lead.—Prices are without change, at 4.50c., New York, for shipment, and 4.55c. to 4.60c., for spot. A steady market prevails in St. Louis, with the price unchanged, at 4.40c. The foreign market is also steady, at £12 12s. 6d. Apparently there is an abundance of Lead there, and no advance is expected until conditions change.

Spelter.—The market is easier, with Prime Western Spelter to be had at 4.55c., New York, and 4.40c., St. Louis. The demand is limited. It is unusual that Spelter and Lead are quotable at the same price, as is now the case. If quotations only were taken into consideration it would indicate that the one was too high or the other too low. Lead, however, has many diversified uses which in a measure account for its strength.

Nickel.—Prices are unchanged, at 45c., for ton lots, and 55c. to 60c., for smaller quantities.

Antimony.—Trade is duller than ever, with not enough transactions to make quotations. Prices are nominally unchanged, at 8.50c., for Cookson's; 8.50c. to 8.62½c. for Hallett's, and 8.25c. for outside brands.

Tin Plates.—With the near approach of July 1 it is expected that the activity at the mills will be curtailed to some extent. Prices, however, are firm, and unchanged, at \$3.70, Pittsburgh, and \$3.89, New York, for 100-lb. IC Coke Plates. In Swansea Welch Plates are unchanged, at 12s.

Old Metals. -Domestic consumers have inquired much Old Metals.—Domestic consumers have inquired much more freely regarding prices, particularly for late third quarter and last quarter delivery. The tone of these inquiries leads holders of Metal to believe that substantial orders would be placed if prices were shaded slightly. There is little possibility of this being done, unless a decided change should occur in the ingot market, as scrap is now scarce, and first hands are reluctant to part with it at these prices. Dealers' selling prices are about as follows:

	Cents.
Copper, Heavy and Crucible	
Copper, Heavy and Wire	
Copper, Light and Bottoms	
Brass, Heavy	
Brass, Light	
Heavy Machine Composition	
Clean Brass Turnings	7.75 to 8.25
Composition Turnings	9.00 to 9.50
Lead, Heavy	4.20
Lead, Tea	3.85
Zine	3.50

Iron and Industrial Stocks.

New York, June 24, 1908.

New York, June 24, 1908.

Values of securities were unfavorably affected in the past week by a number of circumstances. A sharp decline took place in Republic preferred, owing to the passing of the regular quarterly dividend, and Locomotive common similarly suffered under a report that its dividend would be reduced. Naturally, prices of other iron and steel stocks sympathized. The market was also affected by declines in leading railroad stocks. The range of prices from Thursday of last week to Tuesday of this week on active industrial stocks was as follows: United States Steel common 36½ to 38½, preferred 100½ to 102; Car & Foundry common 33½ to 34½, preferred 96; Locomotive common 40½ to 46, preferred 100 to 101; Steel Foundries common 6½ to 7, preferred 35; Cambria Steel 30¾ to 31½; Colorado Fuel 25½ to 27; Crucible Steel common 5½, preferred 41½ to 42½; Pressed Steel

common 25½ to 27; Republic common 16½ to 18, preferred 63 to 66½; Sloss-Sheffield common 49½ to 50½; Cast Iron Pipe common 26 to 26¾, preferred 75½; Can common 4½, preferred 53½ to 54½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 36¾, preferred 101¼; Car & Foundry common 33, preferred 96; Locomotive common 41½, preferred 101; Colorado Fuel 26; Pressed Steel common 26¼, preferred 84; Republic common 16½, preferred 63¾; Sloss-Sheffield common 49½; Cast Iron Pipe common 26½, preferred 73¾; Can common 45½, preferred 53¾.

The Alabama Consolidated Coal & Iron Company reports net earnings for May of \$26,000. It is stated authoritatively that its order book is well filled into the last quarter of the year.

of the year.

Dividends.—The quarterly dividend on the preferred stock of the Sloss-Sheffield Steel & Iron Company, declared week, and which is payable July 1, was 1¾ per cent. Manning, Maxwell & Moore, Inc., have declared a quar-

terly dividend of 1½ per cent., payable July 1.

The General Electric Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock,

payable July 1.

The Yale & Towne Mfg. Company, New York, has declared a quarterly dividend of 1½ per cent. and an extra dividend of ½ per cent., both payable July 1.

Customs Congestion in the Courts.

With the closing of the Federal courts for the summer, as far as tariff litigation is concerned, nearly 45,000 appeals by importers are now pending on the suspended files of the Board of United States General Ap-No more customs cases will be heard by the Circuit Court, the Circuit Court of Appeals and the Supreme Court until October at least.

Most of the issues now pending are those arising under the present or Dingley tariff, although a few questions under the tariffs of 1890 and 1894 are before the courts for final determination. The imminence, however, of new tariff legislation by Congress at a special session to be held early next year is disturbing to those interests desirous of having existing litigation cleared up as soon as possible. It is claimed by the members of the Board of Appraisers that that tribunal cannot properly be held responsible for the great number of customs appeals now pending. According to responsible members of the lower tariff court, litigation has been followed closely, and the board is well up with its routine.

As is well known in customs circles, a new tariff invariably brings in its train thousands of new questions, all of which must eventually be settled judicially by the board and the courts. It is feared that in the event of a new tariff being enacted the courts may become

hopelessly clogged.

Some years ago the calendars of the local United States courts became so seriously burdened with customs cases undecided that a conference was held by officials of the Treasury Department, the Department of Justice and the Judges of the courts in this city. At the time it was stated that further delay in the courts, as far as tariff litigation was concerned, would be done away with. Unfortunately, however, this desired object has not been attained.

The explanation of present conditions seems to lie in the fact that the Federal courts are in no position to devote their entire time, or actually even a small part of it, to the adequate hearing of questions arising under the revenue law. All of the time of the justices, or at least most of it, is taken up with legions of questions wholly irrelevant to the tariff, such as bankruptcy, admiralty, civil and general miscellaneous issues. Under these conditions the judges are said to do the best that they can with tariff cases. The fact remains, however, that material progress is not being made to clear up the issues between importers and the Government, with the result that a new tariff soon to be enacted is sure to add to existing confusion.

Further than this, thousands of dollars in duties are tied up pending final adjudication of the various issues, while more or less uncertainty exists in importing and domestic manufacturing circles regarding the eventual outcome of the litigation. Both importers and American manufacturers or producers of goods realize that a

slight advantage in the rate of duty may decide whether dealing in such merchandise in the United States will be profitable, if, in fact, possible at all. While official figures were not obtainable it is believed that several millions of dollars are tied up pending final tariff decisions by the courts, while much American capital which might be used profitably is held back until it is determined whether the rates of certain lines of imports will warrant home manufacture of the foreign products.

The existing condition of affairs in customs litigation lends strength to a measure introduced into Congress two years ago creating a purely customs court. This bill was drawn by one of the members of the Board of Appraisers, and provides that all tariff cases shall be brought before the tribunal for determination. tain instances, however, appeals may be prosecuted to the Supreme Court of the United States. The promoters of the contemplated court argue that by taking all tariff litigation out of the Circuit Court and the Circuit Court of Appeals customs cases will be accelerated, while the two courts named will be freed of the existing burden of deciding revenue issues. The further claim is made that the proposed customs court, being composed of tariff experts, would be in the natural course of things much better able to handle questions than the general courts.

During the terms of the courts just closed comparatively few issues of importance have been determined, although a considerable number of unimportant issues have been settled. Those in a position to know say that, when the new tariff becomes law, importers' appeals to the courts will be increased during the first few years of the new law, in comparison with present conditions, more than 1000 per cent.

Labor Notes.

At Pittsburgh, on June 22, a conference was held between the Amalgamated Association and the Republic Iron & Steel Company for the purpose of trying to arrange wage scales for puddling and finishing mills for the year beginning July 1. The Republic Company was represented by T. J. Bray and T. R. Akin, together with managers of the various plants. The Amalgamated Association presented a wage scale calling for a slight reduction in wages, while the Republic Iron Company asked for a considerably larger reduction. No agreement was reached, and the conference adjourned without date.

The Aetna Nut Company, Southington, Conn., recently requested its rolling mill employees to agree to a reduction of 10 per cent. in their wages. After due consideration the employees decided to accept the reduction and the works are now in operation as usual. It is hoped that the reduction will not be permanent, and that when business conditions improve the old rate can be restored.

At Detroit, Mich., June 22, the usual order of things in labor injunction cases was reversed when the Metal Polishers, Buffers and Platers' Union, No. 1, obtained a temporary injunction from a State court restraining the police department from interfering with the peaceful solicitation of employees of the Art Stove Company to join the union, setting up that it threatened the ruin of the union. Judge Hosmer warned the men that he was not authorizing any picketing that was contrary to law.

The summer courses at Columbia University, New York, extending from July 7 to August 14, are in four lines as follows: Civil engineering, hydraulics, structures and reinforced concrete. Electrical engineering, electric train movement. Mechanical engineering, gas engines, metallurgical engineering, metallography of iron, steel and industrial alloys. Instruction will also be given in chemistry, drawing, mathematics, mechanics, mineralogy, physics and shop work. The work done in the summer courses counts toward degrees in the various schools of the university.

The Homestead steel plant of the Carnegie Steel Company is now operating more nearly to capacity than at any time since last fall. There is a total of 60 open hearth furnaces in the plant, of which 53 are now in operation.

The Liability of Freight Carriers.

BY R. L. ARDREY.

The greatest service that has ever been rendered to the shippers of the country by the Interstate Commerce Commission is embodied in a recent decision "in the matter of released rates." This decision clears up the mists that have enveloped the question of the liability of railroads under the Hepburn law for loss or damage in transit, and their right to limit their liability in tariff rules or conditions in bills of lading. The report can only be summarized here, as it would fill six pages of The Iron Age, and any shipper who wishes to examine a complete and authoritative review of the question by one of the most eminent lawyers of the country, Commissioner Lane, should obtain a copy of the document from the commission.

Ever since railroad traffic attained considerable magnitude in this country the carriers have endeavored to limit the broad liability which the common law imposes upon them. In recent years these limitations have not only appeared in bills of lading, but have been incorporated in tariff rules which are filed with the commission. As reported in *The Iron Age* last December, the Transcontinental roads went to the length of publishing in their commodity tariffs a rule which made them exempt from liability for practically everything excepting a wreck or failure to deliver. An article in *The Iron Age* of March 12 pointed out the dangers in these rules, if they were to be construed literally as tariff "law."

The Additional Charge of 20 Per Cent Unreasonable.

In all of these rules it was provided that the owner must assume the risk unless he paid a rate 20 per cent. higher. The commission has disposed of these rules by holding: "A stipulation that an additional charge of 20 per cent. shall be collected on property that is shipped not subject to limited liability is unreasonable." This makes an end of the provisions of the "uniform" and "standard" bills of lading, used in official and Southern territory, and the rules that have been heretofore published in the three classifications which cover the entire country—the Official, Western and Southern. The Western roads have already modified their rule, effective July 15, and the Transcontinental lines have withdrawn the objectionable rule in their tariffs.

The decision goes a great deal farther. In practical effect it places the railroads in a position where they cannot make any general rules or tariff provisions to throw on the shipper the ordinary risks to which property is subject in transit. The carrier may say that it will not be liable for loss or damage "from causes beyond its control," but it cannot in a general tariff, or in a bill of lading condition, make the shipper bear the risk of breakage and other ordinary losses which result from the negligence of the railroad or its employees.

The most intricate question passed upon is the right of the carrier to limit the amount or value for which it shall be liable in case of loss. This has been attempted in the classification of brass, copper, lead, base bullion, valuable ores, manufactures of marble and slate, and in the case of household goods. It is held that the railroad cannot fix the valuation arbitrarily, in a tariff, unless it offers a graded scale of rates for different valuations, so that the shipper can have a fair choice in the matter. To a limited extent the right of contract is conceded to the shopper and carrier. Wherever the conditions are such that the shipper has the opportunity to make a fair contract in which he assumes specified risks, or agrees to a reluction.

Fire Loss Not Mentioned.

The decision is silent on the question of fire loss. All the tariff rules and conditions and provisions in bills of lading have emphasized the claim that the railroad will not be liable for loss by fire. This is usually a "cause" beyond the control of the carrier. On the other questions the ruling of the commission is so clear, and reinforced with so many decisions of the courts, which are quoted, that it will scarcely be called in question. There are doubts regarding liability for fire loss which may have been considered by the commission.

The Hepburn law fixes the responsibility for loss or damage "caused" by the railroad or its connecting lines, and gives the shipper the right to recover from the initial carrier. The commission holds that the word "caused" must be interpreted in a broad sense, "broad enough to comprehend all losses due to the carrier's misconduct, whether positive or negative in character." The shipper can well be satisfied with this clear definition of the law. The cases that it does not cover are rare. A fire loss usually occurs after the goods have arrived at destination, when the State law governs under present condi-In some States the carrier remains liable for a specified period-two days, after arrival-while in other States the railroad ceases to be liable for fire loss, or for any risk as a common carrier, after the car has arrived, or, in the case of less than carload shipments, after the property has been unloaded and stored in a depot.

The "conference" bill of lading, which was submitted to the commission a year ago by a joint committee representing the Eastern railroads and various associations of shippers, would have settled the question of fire loss in a definite manner. It provided that the railroad should be liable for fire loss in transit and until 48 hr. after notice of arrival. Shippers of grain, flour, cotton and other commodities offered violent objections to this document. There was a clause in it which gave the railroad the benefit of any insurance on the property. The commodities mentioned are generally insured in transit. as they are shipped on "order" bills of lading, and it was claimed that the cost of insurance would be increased. The railroads were willing to accept the "conference" document and adopt it, but the grain and cotton men have apparently blocked the matter indefinitely. The commission cannot force an agreement nor settle the controversy, as its power does not extend beyond tariffs and rates.

Bringing Order Out of Confusion,

After reviewing fully the questions of law involved, the commission gives as its conclusion: "All tariff or classification rules or regulations which attempt to state, or which involve any of the conditions or principles herein discussed should be constructed clearly in the light of these conclusions, and any such rules or regulations now existent which are not so constructed should be promptly revised." The law places the commission in a strong strategic position in a ruling of this character. The federal courts would not overturn its rulings unless it is clearly in the wrong, and the railroads must now eliminate the objectionable rules from their tariffs, or show good cause for an appeal to the courts.

There has been endless confusion in the law. Under the old principles of the common law, established in the days of the stage coach, a common carrier is liable for everything excepting an act of God or the public enemy. The courts in the United States, in railroad cases, have broadened the old exemptions somewhat. It has been generally held in this country that the carrier is not liable for damage or injury caused by an act of the Government, like a quarantine regulation. A mob which a railroad could not be expected to control or repel is recognized, in this country, as a "public enemy." The railroad is also exempt for loss or damage resulting from the act or default of the shipper, or any inherent vice or defect in the property.

The confusion has resulted from the State and federal courts traveling in different directions in the interpretation of bills of lading. Some States forbid any limitation of the common law liability in a bill of lading, while others permit the railroad to throw the burden on the shipper, if he has accepted a bill of lading which makes him assume the risk. The federal courts have generally refused to recognize the "fine print" in a bill of lading, and have followed their own theory of the liability of the carrier. There has also been difficulty in fixing the liability in many cases where a shipment has passed over two or more roads.

The commission, in its ruling, calls attention to a recent decision by the federal circuit court for the western district of Arkansas (Smeltzer vs. St. Louis & San Francisco Railroad Company), in which the Hepburn law was upheld in making the initial carrier liable for loss occurring on a connecting line.

The Machinery Trade.

NEW YORK, June 24, 1908.

The most interesting developments in the trade the past week pertained to projects for the erection of new shops that have come forward and which will necessitate the purchase of quite an aggregate of new machinery, but much of the new equipment will not be required for some months as plans for the buildings have not yet been completed. The fact that some of these, which were contemplated last year and were held in abeyance because of the business depression, are now showing signs of early consummation is affording considerable encouragement. Aside from these indications of a resumption of a more active demand toward the fall, nothing has developed to give promise of a substantial expansion of trade the next month or two. Since our last report the demand for machine tools has been light, varying but little from the previous week. An increase in the number of inquiries is noted, but these came from the smaller plants and call for only one or two tools each. The larger corporations apparently take no interest in the market, judging from their continued inactivity. It is thought that the railroads and other important interests will have to come into the market more freely before a noticeable improvement in trade will take place. It is stated that the railroads will soon need supplies and machinery, and it will not be surprising to see them do some moderate buying within the next week or two as a result of the conventions held this week of the Railway Master Car Builders' and Mechanics' associations at Atlantic City. A large display of machine tools and railroad supplies was made and manufacturers well represented.

The engineers in charge of the construction of locks and dams for the Panama Canal have been looking into the question of machinery for that work and it is understood that they have complete data on the subject. It is said in the trade the purchasing for that equipment will be begun before long. This construction work will entail some extensive expenditures for immediate machinery equipment, which will include cranes, conveying apparatus, hoisting engines and include cranes, conveying apparatus, hoisting engines and a good assortment of machinery for excavation and construction work. Judging from the extensive inquiries made in the trade with a view to gathering necessary information, it is expected that the purchasing will include a large assortment of machinery, some of which will be permanent equipment used in correcting the locks.

ment used in operating the locks.

Recent changes made in the tariff by the Japanese Gov-Recent changes made in the tarilt by the Japanese Government will undoubtedly be of material benefit to manufacturers of this country, especially as among the articles which will be admitted free of duty is mining machinery. The Japanese buy large quantities of mechanical equipment in this country and only recently made some extensive purchases, which, we understand from a reliable authority, will

chases, which, we understand from a reliable authority, will be followed by purchases of large quantities of material.

Arrangements have been completed whereby the Ames Iron Works, Oswego, N. Y., has secured the property necessary for enlarging its plant, and it is understood that the city authorities have consented to the closing of certain streets which is necessary to the carrying out of the plans the company has in view for enlarging the capacity of its works to meet the demand for its engines and boilers. On the property secured modern buildings for the manufacture of boilers will be erected, covering a space of about 200 x 400 ft. Plans for the additions have not been completed, and only in a general way have the improvements been gone over. Plans for the additions have not been completed, and only in a general way have the improvements been gone over. When the new additions are completed important changes will be made in the present departments. The foundry will be moved from the present location in the north end of the main building adjoining the machine shop to the present boiler shop, which is 100×400 ft. The present machine shop will include the space from Cayuga to Seneca streets, having a ground area of 100×400 ft., with one gallery extending through from street to street, about 50×400 ft. Between the present main buildings and the proposed new boiler shop two warehouses will be built, one with track connections to the machine shop for the storage of engines, to boiler shop two warehouses will be built, one with track connections to the machine shop for the storage of engines, to be served by overhead traveling cranes, and the other connected by tracks to the boiler shop for the storage of boilers, also to be served by overhead cranes. These buildings will be approximately 100 x 265 ft. each. A main power plant will be established in which will be installed all the power machinery, including engines, boilers, generators, air compressors, &c. The total present area of floor space of the shops is about 134,600 sq. ft., which will be increased to 259,090 sq. ft. by the new buildings. With the proposed warehouses and rearrangement of tracks, and additional yard room, much better facilities for the handling and shipping of products will be assured.

Reference was made in these columns some months ago

Reference was made in these columns some months ago the new plant to be constructed by the Heine Safety Boiler Company, St. Louis, Mo. The matter has been held in abeyance some time because of the financial panic which occurred in the latter part of 1907, but now the company

is starting preliminary work of grading the property preparatory to the construction of the plant, it having not yet been decided, however, when actual construction work will begin. Plans for the new plant are being prepared, the buildings of which will be equipped throughout with new machinery.

machinery.

The Graff Furnace Company, whose plant at Dickson City, Pa., was recently destroyed by fire, has acquired the fully equipped plant of the Computing Scale Company, Scranton, which is adapted for the Graff Company's work. Accordingly the company will not purchase as much as it was expected in the trade it would be obliged to buy. It has a complete power plant fully adequate for its needs and a good line of machine tool equipment. A small blower and motor to operate it will be bought, as well as some drills and a few small lathes, and perhaps a scattered line of small machinery to bring the new plant up to its requirements. machinery to bring the new plant up to its requirements.

The New York Edison Company has been placing ord

during the week for equipment to generate about 8000 kw. of power, inquiries for which, as was mentioned in these columns last week, were sent out two weeks ago. This equipment, it is understood, is to be used at the Waterside

Hardy, Voorhees & Co., proprietors of a lumber mill on Metropolitan avenue, Brooklyn, are inquiring for equipment to generate about 500 kw. of power. Richard W. Wright is the engineer in charge and he will probably purchase tur-

Juliard & Co., 70 Worth street, New York, proprietors of the Atlantic Mills at Providence, R. I., have inquiries in the New York market for power equipment to generate about 1500 kw. Turbines will be used and Charles A. Broman can be addressed at 70 Worth street, as he is in charge of the

Business Changes.

The Main Belting Company, Philadelphia, Pa., has opened a branch office at 208 Third avenue, Pittsburgh, Pa., opened a branch office at 208 Third avenue, Pittsburgh, Pa., for the sale of Leviathan belting for main driving and heavy service, to run in heat, steam or water. The company reports a good trade and believes the business throughout the country is steadily improving.

The Pressed Radiator Company, Pittsburgh, Pa., has opened a branch office in the Brunswick Building, Fifth avenue and Twenty-sixth street, New York, for the sale of Kinnear pressed radiators.

Kinnear pressed radiators.

The Wm. B. Scaife & Sons Company, Pittsburgh, has moved its New York office to the Havemeyer Building, 26 Cortlandt street. H. F. Reynolds is in charge of New York sales of the company's products, which include structural steel work, steel tanks and barrels, water filters and water softening apparatus.

Chicago Machinery Market.

CHICAGO, ILL., June 23, 1908.

It cannot be said of last week's transactions in the machinery market that they show signs of decisive movement in either direction. Some concerns have been more fortunate than others in competition for the moderate business that has developed, but on the whole the demand seems to be much the same in volume and character as for weeks past. A considerable number of moderate sized orders for water works and electric power equipment are resulting from municipal projects which include extensions to existing systems or the installation of new plants. Some private enterprises of this kind are also going forward, the most important of which concern hydro-electric installations in the West. Beyond incidental orders for individual tools there is no new business in machine tools emanating from the railroads. What may come in July at the beginning of the new fiscal year for the transportation lines is a matter of conjecture, but as has been intimated before in these reports there is good reason to believe that the improved demand that is exgood reason to believe that the improved demand that is expected to follow the entrance of this period will include a fair proportion of machine tool equipment. The present quietness in manufacturing plants is especially conducive to overhauling operations, which during the several preceding years of extreme activity have been more or less neglected. It is a noteworthy fact that however much business may have been disturbed and confidence impaired by unsettled financial and industrial conditions of the past few months, and output is expressed in any quarter as to the ultimate resno doubt is expressed in any quarter as to the ultimate toration of business activities on a normal basis; nor is it expected that the hoped for improvement will be indefinitely delayed. Opinions, of course, differ as to the time and manner of its coming, but the general belief is strong that before the year is closed there will be an unmistakable upward turn in the general trend of affairs. An improved demand for motive power and electrical machinery is reported by some of the larger manufacturers, the demand being ascribed in some measure to the requirements of industrial plants, but more especially to the orders for additional equipment placed by interurban power plants and central stations supplying electric light and power to cities. In this connection it is stated by the Allis-Chalmers Company that its increase in new business during the month of May shows an advance of 80 per cent. over the preceding month. The orders going to make up this volume are distributed over a wide range of industrial concerns, among which mines, smelters and plants engaged in furnishing building material such as stone, lumber and cement are important factors.

Some recent public sales of second-hand tools and equipment have emphasized the fact that desirable second-hand machinery still commands relatively high prices. Dealers find it difficult to purchase second-hand tools at prices that admit of an adequate margin of profit for rehandling, and while there are still some stocks of considerable size in the various warehouses the percentage of really desirable tools is comparatively small.

is comparatively small.

The Southern Wisconsin Foundry Company, Madison, Wis., has purchased a site upon which it intends to erect a foundry plant that will include a molding shop, 60 x 160 ft., with additions for core room, cleaning room, rattlers and cupola; also a pattern shop, 25 x 50 ft. The building now occupied, which is 40 x 100 ft., will be used for warehouse and storage purposes. Motive power will be supplied by gasoline engines, one of which will be purchased, together with an electric generator; two cupolas, two cranes to handle castings up to 10 and 12 tons, and other machinery necessary for an up to date equipment. In addition to gray iron castings the new foundry will have facilities for furnishing brass castings. The company, which is capitalized at \$25,000, paid in, is officered as follows: George C. Riley, president: Henry A. Knabe, vice-president and superintendent; H. M. Vance, secretary and treasurer.

Among the Western machinery plants which continue

Among the Western machinery plants which continue fairly active is that of the Wilmarth & Morman Company, maker of grinding machinery, Grand Rapids, Mich. This factory we are advised is running with full force 12 hr. a day for four days in the week. While it is impossible to accurately forecast the future, present indications are that shipments during the month of June will not be far from normal. Recent additions to its line of new tools, including a new surface grinder, combination cutter, reamer and drill grinder, are held to be largely responsible for the increase noted in orders.

The city of University Place, Neb., is preparing to make

The city of University Place, Neb., is preparing to make improvements to its water system which will include the replacement of one duplex pump, 12 x 7 x 12 in., and two deep wall names 10 x 26 is by the colories like drives well pumps, 10 x 36 in., by three electrically driven pumps for either direct or belted connection. Bids are now being asked on this equipment and further details can be had by communicating with F. Harbican, water commissioner, Box

Proposals are asked by the Public Lighting Commission, of which F. T. Bowler is secretary, on machinery for an electrical generating plant in the public lighting station at 40 Atwater street, East, Detroit, Mich, bids being received until July 8. The specifications of machinery to be purchased include a two-phase alternating current 60-cycle 2300-volt electric generator, with a rated capacity of 2000-kw. power; steam turbine of 2000-kw. power capacity; condensing apparatus consisting of one condensing cone, one centrifugal pump with direct connected vertical engine, one trifugal pump with direct connected vertical engine, one steam driven dry vacuum pump. Requirements also include auxiliary appliances and apparatus necessary for the complete fitting and installation of these units. The following machinery will be displaced by the new plant: five generaone steam engine, one condenser.

Bids are being asked on material and equipment for a water works plant to be constructed at Dickson, Tenn. The specifications include 2600 ft. of 8-in. and 13,700 ft. 6-in. pipe, 33 hydrants and connections, two hoist pumps, two force pumps with capacity of 700 gal. per min. J. R. Neblew is city engineer in charge of the work.

Contracts recently closed by the Corn Products Company for motive power equipment to be installed in its new plant at Summitt, near Chicago, include one 1500-kw. and one 600-kw. Allis-Chalmers compound Corliss engine, eight 500-hp. units Babcock & Wilcox water tube boilers, one 5,000,000 and one 3,000,000 gal. cross compound Corliss pump, furnished by Laidlaw-Dunn-Gordon Company.

The construction of an interurban traction line connect-

pump, furnished by Laidlaw-Dunn-Gordon Company.

The construction of an interurban traction line connecting the towns of Sparta and Melrose, Wis., is being promoted by the Sparta-Melrose Electric Railway & Power Company, Melrose, Wis. Town bonds in the sum of \$63,000 have been voted in furtherance of this project and another issue of \$45,000 will be passed upon in like manner at an early date. Two routes are being considered, one of which would be 18 miles and the other 28 miles in length. The company is desirous of securing information relative to the adaptability of gasoline electric motor engines for both company is desirous of securing information relative to the adaptability of gasoline electric motor engines for both freight and passenger traffic, including some data as to cost of equipment as compared with electric power stations and overhead trolley. The officers of the company are Charles Newland, president; James Cole, vice-president; Howard Teasdale, secretary, and W. A. Sholes, treasurer. The president resides at Melrose, Wis., and the secretary at Sparta,

The Blaisdell Machinery Company, manufacturer of air

and gas compressing machinery, Bradford, Pa., has opened an office at 428 Monadnock Block, Chicago, to take care of its business in the Middle and Western States.

The Standard Roller Bearing Company, Philadelphia, Pa., announces further expansion of its sales organization by the opening of a branch office at 327 Jefferson avenue, the proof of the page of Ernest L. Smith pagestly appointed.

the opening of a branch omice at 327 Jefferson avenue, Detroit, Mich., in charge of Ernest L. Smith, recently appointed Western representative.

Bids will be received until July 29 by the Commissioners of the Bay Island Drainage and Levee District No. 1, New Boston, Ill., for a pumping plant and sluiceway, including three 250-hp. water tube boilers, three 500-hp. horizontal compound condensing engines and three 60-in. centrifugal compound condensing engines and three 60-in. centrifugal pumps, together with foundations, appurtenances, piping, &c., necessary for complete working plant, as described in detail in the specifications. Alternate bids will also be received for gas producers and gas engines instead of steam boilers and engines. Plans and specifications can also be seen at the office of the Harman Engineering Company, Peoria, Ill.

Cleveland Machinery Market.

CLEVELAND, OHIO, June 23, 1908.

While the orders received by machine tool and machinery manufacturers as yet show little change, the feeling of confidence that the demand will show considerable improvement in the near future is expressed on all sides. This feeling is the result of a very satisfactory increase of inquiries received by the tool makers. There is a slight change for the better in the volume of orders, and the inquiries indicate that many consumers that have been out of the market for a number of months will soon be in the market for some additional equipment. While a decided improvement is not expected during the hot summer months, it is the belief that orders will pick up slowly during July and August, and that with the coming of the fall months there will be considerable improvement all along the line. The movement started by the Cleveland Chamber of Industry to make July 1 employment day, on which the local industrial plants are to take on as many workmen as possible, is meeting with general favor and has been indorsed by the Manufacturers' Club and other

Dealers in machine tools report no change in the situation. Orders are about as they have been for a number of weeks, being mostly for single tools or very small lots. There are some inquiries pending for larger lots, but buyers are slow in placing orders. Fewer second-hand tools are being offered, and while two or three fairly good lots are in the market the owners are holding them for good prices.

being offered, and while two or three fairly good lots are in the market the owners are holding them for good prices. The demand for second-hand tools is fairly good and dealers do not keep them in stock long before finding purchasers. In most manufacturing lines some improvement in orders is reported. Stocks of all kinds are low, so that a change for the better in general conditions is expected to be quickly followed by an increase in the volume of orders. There is better inquiry for special machinery. Crane builders report the outlook some better, inquiries being a little more numerous, but purchasers are still slow in placing orders. Structural shops are receiving a larger number of small orders, their business being stimulated somewhat by the reduction in price of structural material. Boiler makers report their volume of orders rather light.

The National Nut & Bolt Lock Company, Cleveland, recently incorporated with a capitalization of \$40,000, will manufacture nut locks, principally for steam railroad car trucks. The company has opened offices at 1130 Schofield Building. Albert M. Allen is the president; John F. Crowl, secretary, and George B. Martin, treasurer. The company expects to build a plant and is now looking for a site in some northern Ohio city. The company will be in the market for some machinery, including punch presses, hardening furnaces and an electrical welding outfit.

The National Cash Register Company, Dayton, Ohio, has a good sized inquiry out for machine tools. While the company has temporarily delayed its purchases, it is understood that orders for the additional equipment will be placed soon.

The Gregg Mfg. Company has established a plant at 1318

that orders for the additional equipment will be placed soon.

The Gregg Mfg. Company has established a plant at 1318 The Gregg Mfg. Company has established a plant at 1318 West Fourth street for making machines for cutting core wire, dies and special machinery. The core wire machine is said to be the only machine of the kind on the market and the company has already received a satisfactory number of orders. F. M. Gregg is proprietor of the company.

The Cleveland Wire Spring Company reports a gradual increase in orders, every month showing up better than the previous one, and the outlook encourages the company to believe that the volume of its business will soon be back to normal.

ormal.

The Hamilton Mfg. Company. Columbus, of which W. K. Field is president and W. E. Hamilton general manager. has purchased a new site on East Fifth street and the Big Four tracks in that city and will build a new plant. The company makes pit car loaders and patent coal and coke

storage machines. The growth of its business has made it

The Borden Company to have a larger plant.

The Borden Company, Warren, Ohio, maker of die stocks, reports a considerable improvement in the volume of its orders and its working force is being increased from day to day. A change has just been made in the organization of the company, Alfred W. Howe, who recently returned from a trip to Europe, where he visited the leading plumbers' appoly houses being made vice-president.

from a trip to Europe, where he visited the leading plumbers' supply houses, being made vice-president.

S. C. Cutler, formerly vice-president of the Republic Belting Company, Cleveland, Ohio, has severed his connections with that company and has opened an office in the Schofield Building, where he is handling the entire lines manufactured by the B. F. Sturtevant Company, Boston, Mass. This line includes mechanical heating and ventilating apparatus, mechanical draft, economizers, engines, motors, generating sets and forges, also electric ventilating fans and a new steam turbine and high pressure rotary blower. Mr. Cutler is devoting his entire energy to the Sturtevant line and is well equipped to handle any matters that may come up. The Cleveland office has closed up several nice orders of late, including the heating and ventilating apparatus for of late, including the heating and ventilating apparatus for the new chemical laboratory, Adelbert College, consisting of fan, heater, tempering coil, exhauster and engine; the heating and ventilating apparatus for the new Technical High School, consisting of four large steel plate fans, four tempering coils, two electric exhausters, four electric propeller fans and a cast iron electric exhauster: also a large pressure blower, with direct connected engine, for the Board of Public Service, Water Works Department, Sandusky, Ohio, to be used in connection with a 6,000,000-gal. filtration

The Central Foundry Supply Company, Columbus, which was recently incorporated to take over a foundry supply business located on North Fourth street, has organized by the election of the following officers: John S. Ball, president: Dwight R. Mann, vice-president; Charles E. Whiton, secretary and treasurer.

Through the efforts of the Zanesville Chamber of Commerce, J. Burkhart & Son, bent wood manufacturers, of Caldwell, Ohio, will move to Zanesville, where they will build a

new pic. new plant.

The Falls Heat, Light & Power Company, Cuyahoga Falls, Ohio. has been incorporated, with a capital stock of \$10,000, to operate under a franchise recently granted to C. M. Walsh. The company expects to furnish power to a number of Cuyahoga Falls enterprises. The incorporators are W. A. Searl, S. D. Tifft, W. B. Middleton, C. A. Davis and C. K. Fowler.

The Ohio State Board of Public Works and Superin-

and C. K. Fowler.

The Ohio State Board of Public Works and Superintendent of Canals Charles Hatch have awarded a contract to the Marion Steam Shovel Company, Marion, Ohio, for an \$8000 steam dredge to be used in canal improvement work between Massillon and Cleveland.

J. C. Lassen of Cleveland has started a machine and repair shop at the corner of Main and Vine streets, Oberlin. He will repair machinery, boilers and engines.

The plant of the Sandusky Grille & Mfg. Company, Sandusky, Ohio, will be offered for sale July 1 by V. K. McBride, the trustee. The plant includes factory and storage sheds, appraised at \$38,430; warehouse, appraised at \$8235; dock, appraised at \$8235, and personal effects, including line shafting and 150 woodworking machines, appraised at shafting and 150 woodworking machines, appraised at \$11,201. The property will be sold either entire or in par-

Cincinnati Machinery Market.

CINCINNATI, OHIO, June 23, 1908.

While actual transactions cannot be said to show any special increase in number and value to the builders of machinery and machine tools in this market, the tone of correspondence is infinitely more satisfactory. time is set for the filling of a part or the whole of specifications for tools and equipment. This feature of the situation was brought up enough by representative manufacturers in this section the past week to justify the statement that there is a distinct improvement, although nothing permanent or approximating the situation of the early part of 1907 is expected this year. Another pleasing feature of the situation is the altered attitude of the railroad corporations and others which have been holding off so stubbornly.

Late correspondence now indicates that these corporations are beginning to go over shop requirements in the way of tools and equipment, and it is believed that some fairly good purchases have been ordered within the past few days, or Approaching the midyear since the Chicago nominations. turn, July 1, all industrial establishments in this field are particularly alert, for besides marking the date for fruition of efforts of the National Prosperity League of Cincinnati, re-employment day, it is expected to mark a change of heart in machinery and shop circles all through this sec-

Manufacturers of the medium and smaller sizes of lathes, shapers, planers and the like almost uniformly report good sales to automobile companies and shops devoted to light manufacturing specialties. Buyers are still very conservative and it is still only the most urgently needed tools that are being purchased. A traffic manager of a railroad interest are being purchased. A trame manager of a railroad interest in this section, speaking of the situation, reported a conversation held with the manager of a large car building plant employing 4500 men in normal times, in which he noted that a certain large railroad corporation had asked blos on a large amount of car equipment. In addition to the im-proved outlook from car building and repairs, the character proved outlook from car building and repairs, the character of correspondence from other lines of manufacture gives tool manufacturers much encouragement, and while some do not look for any material improvement before 1909, others expect to fill some fairly good sized orders within the course of two or three months. A number of prominent tool manufacturers have been in the East and at Atlantic City in attendance upon the conventions of the Railway Master Car Builders' and Master Mechanics' associations.

Precident Wey Ledge of the Ledge & Shipley Machine

President Wm. Lodge of the Lodge & Shipley Machine Tool Company was to sail for Europe this week, and it is not thought that the little fire which visited the plant Saturday will interfere. The reports in the daily press were considerably exaggerated. Originating in the pattern shop, it was confined to that department and the loss will not exceed \$10,000. Some patterns, pattern lumber and woodworking machinery, mainly saws and woodworking lathes, were burned.

were burned.

The Sebastian Lathe Company, Covington, Ky., makes an encouraging report. The statement is made that the company is running 55 hr., has not lost an hour nor laid off a hand during the months of depression. It is accumulating a little stock, but believes it is good property at the present price of material.

price of material.

The Queen City Shaper Company reports encouraging conditions and some evidences of improvement. A special machine just shipped to a large machinery house in London is of the universal type, 16-in. revolving table, with tilting top for compound angles and power down feed to head. Another machine of the regular 20-in, type goes to Atlanta, Ga. The company is now running on a series of 24-in. machines for stock, a size that seems to be in fairly good demand. One of the large local planer manufacturers recently sold to Chicago parties à 72-in. machine, the largest size made in its shop. In planers the smaller size and lighter builds seem to have the call in this market, with the few exceptions of special machines noted.

The Fay Equilibrium Power Company will be incorpo-

The Fay Equilibrium Power Company will be incorporated to manufacture an apparatus for increasing power by Alpheus Fay, the inventor; Edward F. Smith, a local inventor and electric experimenter; Peter J. Yung, Robert Glier and C. J. Stace. Temporary quarters are now utilized in the building at 44 Walnut street, the shop of the Lektro Mfg. Company, of which Mr. Smith is general manager. The company will within the course of a few weeks equip an Ohio River boat and conduct a series of demonstrations. The invention will be put out on a royalty basis only.

The invention will be put out on a royalty basis only.

Manufacturers of pumping machinery report inquiries increasing, especially for the larger units. The John H. McGowan Company has shipped during the past 10 days equipment for water works plants in the States of Texas, Georgia, two; Illinois, North Carolina and Florida. The company has equipment on the floor in process of construction for four more plants and several scattering orders for parts. It has maintained recently a full schedule, and for some weeks has worked overtime on some of its larger work.

The Zanesville, Ohio, plant of the American Rolling Mill Company is shut down for a short time, or until orders justify resumption of work.

The three new buildings for the American Seeding Machine Company, Springfield, Ohio, are in process of construction by the Eilenberger Construction Company of that city and will be pushed to completion, the contract naming November 1. The cost of construction is estimated at between \$50,000 and \$60,000.

The contract for the construction of the new factory of the Lurger Employering Company in Andrews Lud ware

The contract for the construction of the new factory of the Union Embossing Company in Anderson, Ind., was secured by John Clifton & Son, Indianapolis, Ind. On the company's 9 acres in the southeastern part of the city three buildings will be erected, one 65 x 400 ft., one 30 x 210 ft. and a two-story office building 30 x 50 ft. Work has already commenced.

The Climax Machine Company, recently organized by Grant Border and George Reiser, has established a shop in

Richmond, Ind., for doing all kinds of machine work.

The Victor Stamping Company, Twightwee, a suburb of The Victor Stamping Company, Twightwee, a suburb of Cincinnati, manufacturer of coal hods, will erect a one-story addition, 80 x 260 ft., at a cost of approximately \$10,000. The company reports business very fair, and since it has been determined to add a line of other specialties, such as water pails, washtubs, bushel baskets, garbage cans, &c., the need of additional room for special machinery, which is being purchased, was so obvious that plans were prepared and the building, which is to be of brick, will be rushed to completion. Robert McIntosh and Clarence Morkel, superintendent and chief bookkeeper respectively of the Galion, Ohio, Iron Works, have leased the foundry department of the Ashland Steel Range & Mfg. Company at Ashland, Ohio, and will conduct a jobbing foundry business in that city. It is understood that they already have practically all the castings specifications of three large machinery concerns, and as the new acquisition is well equipped with the necessary appliances all that they will need is a stock of iron for immediate use.

New England Machinery Market.

WORCESTER, MASS., June 23, 1908.

Dullness continues to prevail in the machinery trade, neither dealers nor manufacturers finding much new business. An occasional good order is recorded, and some small sales are booked, but beyond this small volume of trade there is little activity, even inquiries having fallen off. It is thought that this condition will continue with little change until the autumn.

The foundries are correspondingly dull, not only in the jobbing trade, but also in those works where the foundry plays an essential part in manufacturing. In Taunton, Mass., for example, the stove manufacturers are not busy. Their works are running on short time with reduced forces, the stove trade not having responded to its season to the extent expected.

The New England foundries have stopped buying pig iron. Very heavy sales were made previous to the increase in price early in June, but with the advance came a sudden cessation of activity, those who had failed to take advantage of what they now term the bottom price deciding to wait until business is in sight that will make the iron necessary. They do not expect a recession to the lower price, however. It is estimated that contracts have been placed for 65 per cent. of the iron for the third quarter of the year, but that less than 35 per cent. of that for the final quarter has been

arranged for. is an interesting fact that some of the machine tool builders are deferring the announcement of new tools, be-lieving that they will be better served to await the return of greater activity in their market before advertising improvements or innovations or additions to lines. The argument is that there will be greater interest in such things later on. However, their representatives are doing missionlater on. ary work by spreading the information to known prospective customers. On the other hand, the large majority of the trade believes that this is the time to let the public know what they have for sale; that buyers have more time to go into the details of new tools than they will have later. In some cases one form of economy has been to avoid the expenditure of money for developing new ideas, so that work on some improvements will be postponed until business has resumed a normal condition.

The promised demand in New England for power equipment, allusion to which has been made, extends in an impor-tant way to the electrical industry. The Boston dealers have ment, allusion to which has been made, extends in an important way to the electrical industry. The Boston dealers have long lists of concerns which by inquiry or otherwise are known to be coming into the market in the near future. The requirements include all types of industrial electrical equipment, from generating units, motors and other accessories of power installations, to telephone systems and general supplies. This branch of the trade is keenly confident that there will be a good deal of hydrogen within a chart that there will be a good deal of business within a short time, the general situation being influenced by the enterprise of manufacturers who are availing themselves of the period of slack business to place their plants in condition for the revival.

The revival of the cotton industry, the effect of which on the supply trade was noted last week, is also having a marked influence on the cotton machinery builders, who are increas-ing their production, running in some cases longer hours, and in others with larger working forces. The machine tool people have knowledge of practical benefits, which will accrue to them from this source in the near future, but they are not advertising the information. There is naturally an unusual reluctance to part with inside knowledge of probable orders.

reluctance to part with inside knowledge of probable orders. Charles A. Clarke, head of the machinery house of Hill, Clarke & Co., Inc., Boston and Chicago, has returned from a business trip abroad, where he visited the machinery centers of England, France, Germany and Holland. He states that he found business in Europe in much the same condition as in this country, the depression following that in America, to which it is attributed. Its termination, according to general opinion, will be dependent upon a return of prosperous times here. The basis of present business is perhaps a little stronger over there, said Mr. Clarke; probably the percentage of production as compared to total industrial capacity is greater. There is little market for machine tools, excepting some of those of the higher grades. He was impressed with the fact that American machinery is still well in the lead as compared to that of foreign builders. They have copied our machines in a great many cases, and as a conse-

quence are always behind, producing what are termed here old style. Their machinery is not so well built, lacking thoroughness in some details, largely for the reason that their workmen are less thorough. There are exceptions to this, however, for some European built machinery is first-class in every way. There is still far too little specialization in manufacturing. The shops build too great a variety of in manufacturing. The shops build too great a variety of machinery, instead of concentrating on a single line or a very few, thus following the practice that has had so great an influence in putting American machinery where it is. Shop conditions are not so advantageous in bringing about the best work. Workmen have not the same conveniences. In spite of the lower cost of labor foreign machines of equal grade sell at higher prices than American tools. The trade abroad insists on perfect workmanship and where this is abroad insists on perfect workmanship, and where this is combined with superiority in design and invention there is Mr. Clarke found a great interest in the subject of compulsory working of patents, especially in Germany and England, in which latter country a new law to that effect has gone

in which latter country a new law to that effect has gone into force. Crop conditions appeared to be excellent everywhere in Great Britain and on the Continent.

The extension of shop vacations into periods much longer than usual, already noted, is becoming an important factor in summer plans, it being considered wise to adopt this form of curtailment of production. A number of announcements of a month's vacation have been made, and others will come during the part formight.

of a month's vacation have been made, and others will come during the next fortnight.

The Whitin Machine Works, Whitinsville, Mass., manufacturer of textile machinery, is buying machinery for the equipment of an addition to its works. Another customer is William F. Draper, Hopedale, formerly head of the Draper Company, who will occupy a part of the new building of the C. F. Roper Company as a shop for the development of textile machinery in which he is interested.

The newspaper announcement that the Boylston Mfg. Company, Boston, Mass., is to begin the manufacture of shoe

Company, Boston, Mass., is to begin the manufacture of shoe machinery on a large scale appears to be premature, as the company states it has no intention of proceeding with any radical enlargement at the present time. The company is developing a complete line of shoe machinery at its shops on A street, South Boston, and in practical operation in the shop building owned by H. H. Rogers at Fairhaven, Mass., where shoes are manufactured, with the purpose of perfect-ing details in machinery. At the present time there is no intention of doing more than carry out the work of development.

A number of textile manufacturing concerns are plan-Mills, Holyoke, Mass., will erect a mill, 100 x 300 ft., and five stories. A. D. Ellis, Monson, Mass., will erect a three-story factory building, 65 x 120 ft., with ell, 40 x 100 ft., and dye house, 30 x 75 ft., besides an office building. At Woonsocket, R. I., the Lowland Worsted Company will build an additional mill. 75 x 150 ft. two stories and becoment additional mill, 75 x 150 ft., two stories and basement.
The plans for the new Manual Training School at Chico-

The plans for the new Manual Training School at Chicopee. Mass., call for a machine shop and woodworking room, 38 x 54 ft., and forge shop and molding room.

The loss to the American & British Mfg. Company by the fire June 13 at its works at Providence, R. I., formerly the Corliss Engine Works, was a serious one, totaling, it is estimated by the company, \$200,000. The power plant was destroyed; about 400 ft. in length of the No. 1 shop was burned and the remainder damaged. The new shop was not seriously affected, excepting that the cranes were bunched where they got the fire and are seriously damaged. The foundry escaped. About 10 per cent. of the machine tools in the No. 1 shop had been moved to the new building; the rest were ruined or badly damaged and will have to be rein the No. 1 shop had been moved to the new building; the rest were ruined or badly damaged and will have to be replaced. It will be necessary to rebuild a part of the burned structures immediately, but some of the new work will be deferred for the present. Arrangements have been made for buying electric power, so that work will resume again, almost immediately. Business at the works was at a low ebb, so that loss by inability to fill orders is not material.

The American Typewriter Company, 265-267 Broadway, New York, has established a factory for the manufacture of its typewriters in the building of the Hurwood Mfg. Com-

New York, has established a factory for the manufacture of its typewriters in the building of the Hurwood Mfg. Company, Bridgeport, Conn. A general manufacturing room is 40×100 ft., and in addition there are rooms for nickeling, japanning, polishing and rough machine work. It is expected to employ from 100 to 125 men. The product of the company has formerly been manufactured by contract by outside parties. Automatic screw machines, drill presses and other machinery have been purchased, and more tools will be purchased as requirements demand.

other machinery have been purchased, and more tools will be purchased as requirements demand.

The Bath Iron Works, Ltd., Bath, Maine, shipbuilder and engineer, states that it proposes to rebuild at once that part of its plant which was recently destroyed by fire, includ-ing the boiler and copper shops, and will be in the market for equipment to replace that which was lost, including ma-chine tools, traveling crane and steel for the buildings. The loss included eight of the boilers for two new torpedo boat destroyers in process of construction.

The Bridgeport Wire Bound Box Company, Bridgeport, Conn., which will manufacture a new patent wooden box bound with wire in such a manner as to tend toward

strength and lightness, has leased a tract of land on the water front at Bridgeport, and will build a plant and wharf as soon as possible. The company is not yet ready, however, to give out details as to the buildings, nor the machinery which will be required to equip the works. The stock of the company is held principally by men prominent in the management of the Yale & Towne Mfg. Company, Stamford, Conn. W. H. P. Roots is president, Charles O. Collett, vice-president and William Arthur, secretary and treasurer.

The John T. Young Boiler Company, Norwich, Conn., which will manufacture heating boilers as already stated, has organized with John T. Young, Norwich, as president; A. W. Dodge, Springfield, Mass., secretary and treasurer, with A. J. Dawley, Norwich, as the third director. The officers state that the equipment for the new shops has been con-

state that the equipment for the new shops has been con-

tracted for

The Hydrocarbon Converter Company, New London, Conn., has bought a tract of land with water front in that city, and will erect works for the manufacture of a new device designed to make possible the use of crude oil as fuel in the ordinary type of combustion engine. The plan is to in the ordinary type of combustion engine. The plan is to proceed with the building immediately, though details are not yet ready for announcement. According to description furnished by the company the device is attached to the exhaust pipe close to the engine, and the crude oil passing through it is decomposed, and the resulting gas fed to the engine between the carburetter and cylinder, or may be stored in a tank and used as required. It is claimed that a very high per cent. of pure gas is obtained, the figure given out being 93 per cent., and that the device will not only make possible the use of crude oil in gasoline engines but one-third more power is produced. The relative cost of the two fuels is about as 4 to 12 cents. The company is incorporated in Delaware, with an authorized capital stock of \$100,000.

Philadelphia Machinery Market.

PHILADELPHIA, PA., June 23, 1908.

The past week has brought out somewhat more than the usual run of business. Sales of single tools have been a little heavier, and there have also been a few sales of larger lots of tools for small plants and minor extensions. trade feels more encouraged with the prospects, and while it is not expected that any great volume will come out during the summer months, it is anticipated that a material resumption will develop during the fall months, and that normal conditions may be looked for early next year.

The railroad situation is looked upon more hopefully. The conventions of the Railway Master Mechanics' and Master Car Builders' associations at Atlantic City the past Master Car Builders' associations at Atlantic City the past week have brought the trade in closer touch with the railroad situation, and it is believed that, with the large number of idle cars on railroad sidings, the larger proportion of which are in need of considerable repair, it will be necessary for the railroads shortly to begin work on these cars to place them in order for service in the fall, when crops begin to move and business generally is expected to revive. Some roads are said to be already having lists prepared, so as to cover their needs, but it is more than likely that these will be held up for a time, pending a little clearer insight into the situation. The industrial plants show little inclination to enter the market, their present equipment, in most cases, being far more than sufficient to take care of the business already in hand. These, like many other industries, are dependent to a large extent on the railroads.

dependent to a large extent on the railroads.

There has been but little development of importance in the foreign trade. Inquiries have been comparatively light, and are largely confined to special tools, for which some few

orders have been booked.

The demand for second-hand tools and machinery con-tinues quite brisk. The business transacted has been largely The demand for second-hand tools and machinery continues quite brisk. The business transacted has been largely in single tools, particularly those of the medium classes, although some inquiry for tools of the heavier types is reported. In the aggregate, sales have averaged up fairly well, and prices are reported as being satisfactory. In the second-hand boiler trade business is only fair, there being not as large a demand for power equipment as there is for tools. Sales of some few installations of new, medium and larger power boiler equipment are reported.

Neither the steel casting plants nor the gray iron foundries report much increase in business. There have been some gains made in tonnage, but orders are still pretty well scattered and usually small and for prompt shipment. But little business develops from the machine tool trade. The railroads show no disposition to buy, and business on the whole is still largely of a day to day character.

The Commissioner of Health, Harrisburg, Pa., will receive bids until June 30 for furnishing and erecting a complete garbage and refuse disposal plant at the State South Mountain Sanatorium, Mont Alto, Pa. Ingenuity of design and economy of operation will, it is understood, be given consideration in the awarding of the contract.

The Ferracute Machine Company, Bridgeton, N. J., re-

ports business to have improved considerably in the past three weeks, particularly in the Philadelphia District. May showed an improvement in orders over April, and in the first 10 days of June orders amounting to half of the entire amount booked in May were received, so that the outlook for June is considered favorable.

for June is considered tavorable.

The Union Twist Drill Company, Athol, Mass., will establish on July 1 a branch sales and distributing office for its line of milling cutters and twist drills in Section Z, Bourse Machinery Hall, in charge of George J. Hawkey. A large stock of both milling cutters and drills is to be maintained at the new branch.

tained at the new branch.

The Millville, N. J., City Council has instructed its Sewer Committee to consult an engineer and have plans prepared for the construction of a sewage disposal plant and to begin work at once. The new plant is estimated to cost

about \$20,000.

The Bethlehem Foundry and Machine Company, South Bethlehem, Pa., reports a steady improvement in business since January 1. May was the best month of the year. This company has a number of important contracts on hand, including one for highly ornamental electroliers, designed by Carrere & Hastings, New York City, for Atlantic City, N. J. Further orders include power pumps for water works and contracts for ornamental iron work for the Whitney Building, San Francisco; Seneca Hotel, Rochester, N. Y.; Sage Building, Rochester Polytechnic Institute, Rochester, N. Y., and entrance kiosks for the Hudson River tunnels at Hoboken, N. J.

It is understood that the Fowler & Wolfe Mfg. Company. The Bethlehem Foundry and Machine Company, South

It is understood that the Fowler & Wolfe Mfg. Company, Norristown, Pa., has awarded a contract for an addition to its machine shop.

The Fairbanks Company has completed alterations to its offices and salesrooms at the northwest corner of Seventh and Arch streets. These included the taking in of the ground floor of the two adjoining buildings, 707 and 709 Arch street, and the complete rearrangement of the interior. Over 8000 sq. ft. of floor space, more than double the former amount, is now given over to the display of machine mer amount, is now given over to the display of machine tools, scales, gas engines, power transmission equipment, valves, small tools and general supplies, each department being given a separate floor space. The small tool department has been increased materially, and the arrangement and facilities made for handling this class of business are most complete. The business and accounting department, as well as the display floor, are exceptionally well lighted by means of a large overhead skylight, and the whole general arrangement emphraces the most modern ideas in corporation with the ment embraces the most modern ideas in connection with the machinery and supply business. Business is reported by the company to be in fairly satisfactory condition.

St. Louis Machinery Market.

St. Louis, June 23, 1908.

Of late both manufacturers and dealers are finding an increase in the inquiry for machinery, and more sales are resulting than was the case last month. While in general the feeling is better, there are some lines which have no marked improvement to report. There is a fair demand for second-hand machinery.

In metal working machinery a better inquiry is found, without much increase in sales. Business in machine tools shows some improvement. Saw mill machinery is still in slow demand, though an improvement is noted in the sale of woodworking machinery. Pumps and small boilers are in better request. Flour mill machinery is ruling dull. Heavy boilers are in some demand and there is a moderate call for small engines. Wire rope is in steady and fairly good demand. Electrical appliances of all kinds meet with ready sale and the automobile industry is finding conditions improved

proved.

The Vacuum Cotton Picking Machine Company of St. Louis has been incorporated, with a capital stock of \$750,000, to manufacture and place on the market a cotton picker operated by compressed air, with gasoline power. John S. Thurman, who is president, is also head of the General Compressed Air & Vacuum Machinery Company.

Government Purchases.

WASHINGTON, D. C., June 23,1908.

The Bureau of Yards and Docks, Navy Department, Washington, will soon ask bids for a coal handling plant for the new central power house at the New York Navy Yard.

The Isthmian Canal Commission will shortly ask proposals for six-roller bearing geared ratcher screw jacks, 35

tons capacity, one single and six duplex cableways, with the necessary motors, and other supplies.

The following bids were opened June 15, Circular No. 443, for supplies for the Isthmian Canal Commission:

Class 3.—One hand planer and jointer—Bidder 2, American Woodworking Machinery Company, Rochester, N. Y., \$300; 4. Atlantic Works, Philadelphia, Pa., \$227; 14, Bentel & Margedant Company, Hamilton, Obio, \$250: 37, Drew Machinery Agency, Manchester, N. H., \$173.75; 40, Fairbanks Company,

New York, \$190; 42, J. A. Fay & Egan Company, Cincinnati, Ohio, \$243; 44, Fox Bros. & Co., New York, \$213.25; 45, Fox Machine Company, Grand Rapids, Mich., \$242; 52, Handlan-Buck Mfg. Company, St. Louis, Mo., \$257; 60, International Electric & Engineering Company, New York, \$164.45; 74, Manning, Maxwell & Moore, New York, \$285; 94, Oliver Machinery Company, New York, \$257; 109, Charles E. Robidoux, St. Louis, Mo., \$266; 123, H. B. Smith Machine Company, Smithville, N. J., \$224; 147, J. K. Larkin & Co., New York, \$257.48.

Class 4.—One universal saw table—Bidder 2, American Woodworking Machinery Company, Rochester, N. Y., \$320; 14, Bentel & Margedant Company, Hamilton, Ohio, \$200 and \$225; 37, Drew Machinery Agency, Manchester, N. H., \$189; 40, Fairbanks Company, New York, \$196; 42, J. A. Fay & Egan Compary, Cincinnati, Ohio, \$257; 44, Fox Bros. & Co., New York, \$198; 45; Fox Machine Company, Grand Rapids, Mich., \$346; 52, Handlan-Buck Mfg. Company, St. Louis, Mo., \$272; 60, International Electric & Engineering Company, New York, \$188; 74, Manning, Maxwell & Moore, New York, \$290; 82. Motley, Green & Co., New York, \$150; 94, Oliver Machinery Company, New York, \$328, \$335.50 and \$348; 109, Charles E. Robidoux, St. Louis, Mo., \$205; 123, H. B. Smith Machine Company, Smithville, N. J., \$207.50.

Class 5.—One band saw—Bidder 2, American Woodworking Machinery Company, Rochester, N. Y., \$110; 4, Atlantic Works, Philadelphia, Pa., \$105; 14, Bentel & Margedant Company, New York, \$155; 37, Drew Machinery Agency, Manchester, N. H., \$90; 40, Fairbanks Company, New York, \$92.50; 42, J. A. Fay & Egan Company, Rochester, N. Y., \$110; 4, Atlantic Works, Philadelphia, Pa., \$105; 14, Bentel & Margedant Company, New York, \$150; 37, Drew Machinery Agency, Manchester, N. H., \$90; 40, Fairbanks Company, New York, \$92.50; 42, J. A. Fay & Egan Company, New York, \$155; 54, Handlan-Buck Mfg. Company, St. Louis, Mo., \$139; 60, International Electric & Engineering Company, New York, \$152; 54, Handlan-Buck Mfg. Company, St. Louis, Mo., \$13

The following bids were opened June 16 for supplies for the navy yards:

The following bids were opened June 16 for supplies for the navy yards:

Class 1.—Twenty ammunition holst equipments—Bidder 38, Cutler-Hammond Mfg. Company, Milwaukee, Wis., \$1826.75, \$1857.25 and \$1927.50; 86, General Electric Company, Schenectady, N. Y., \$2198.50 and \$2550.50.

Class 2.—Twenty ammunition holst equipments—Bidder 38, Cutler-Hammond Mfg. Company, Milwaukee, Wis., \$1826.75, \$1856 and \$1917.50; 86, General Electric Company, Schenectady, N. Y., \$2183.50 and \$2546.

Class 3.—Twenty 15-hp. elevating equipments—Bidder 51, Diehl Mfg. Company, Elizabethport, N. J., \$10,946; 86, General Electric Company, Schenectady, N. Y., \$9984 and \$10,044; 139, Northern Electrical Mfg. Company, Madison, Wis., \$9160; 183, B. F. Sturtevant Company, Hyde Park, Mass., \$48960.

Class 4.—Twenty 10-hp. rammer motors—Bidder 51, Diehl Mfg. Company, Elizabethport, N. J., \$414.86; 86, General Electric Company, Schenectady, N. Y., \$4090 and \$4106; 139, Northern Electrical Mfg. Company, Madison, Wis., \$3955; 183, B. F. Sturtevant Company, Hyde Park, Mass., \$4554.

Class 5.—Twenty 10-hp. rammer controllers—Bidder 38, Cutler-Hammond Mfg. Company, Milwaukee, Wis., \$3500; 86, General Electric Company, Schenectady, N. Y., \$4882 and \$4942; 139, Northern Electric Company, Schenectady, N. Y., \$4884 and \$5658.

Class 6.—Twenty 39-hp. breech opening equipments—Bidder 51, Diehl Mfg. Company, Elizabethport, N. J., \$4816; 86, General Electric Company, Schenectady, N. Y., \$4882 and \$4942; 139, Northern Electrical Mfg. Company, Madison, Wis., \$3020; 183, B. F. Sturievant Company, New York, \$470: 135, National Electrical Mfg. Company, Madison, Wis., \$3020; 183, B. F. Sturievant Company, Schenectady, N. Y., \$4882 and \$4942; 139, Northern Electrical Mfg. Company, Madison, Wis., \$5020; 183, B. F. Sturievant Company, Schenectady, N. Y., \$4882 and \$4942; 139, Northern Electric Company, Schenectady, N. Y., \$4882 and \$4942; 139, Northern Electric Company, New York, \$410; 135, National Electrical Mfg. Company, New York, \$410; 135, National Electrical Mfg

Company, New York, \$775; 71, Fairbanks Company, New York, \$785.

Class 80.—Twelve chain hoists—Bidder 18, Brown Hoisting Machinery Company, New York, \$883.50; 69, Frevert Machinery Company, New York, \$883.50; 69, Frevert Machinery Company, New York, \$615.78; 76, G. & W. Mfg. Company, New York, \$612; 79, R. W. Geldart, New York, \$750; 105, J. B. Kendall, Washington, D. C., \$712.68; 115, Manning, Maxwell & Moore, New York, \$667.06; 124, Motley, Green & Co., New York, \$705.60; 194, Ivan Spangerberg, New York, \$762 and 670.26.

Class 81.—Four induction motors—Bidder 23, Burke Electric Company, Erie, Pa., \$1774; 50, Drew Machinery Agency, Manchester, N. H., \$1932.64; 86. General Electric Company, Schenectady, N. Y., \$1678; 110, Lincoln Electric Company, Cleveland, Ohio, \$1600; 216, Western Electric Company, New York, \$1696; 217. Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., \$1706; 219, Wagner Electric Mfg. Company, St. Louis, Mo., \$1547.08, \$1347.96 and \$1256.68.

The following bids were opened at the Bureau of Yards and Docks, Navy Department, Washington, D. C., June 13, for an air compressor with accessories for the navy yard, Philadelphia, Pa.:

Item 1. Net price for compressor machinery complete in accordance with plan and specification.

Item 2. Net price for compressor machinery complete in accordance with plan and specification, except that all condensor equipment shall be omitted.

Nordberg Mfg. Company, Milwaukee, Wis., item 1, \$23.800; 2, \$22.600; Sullivan Machinery Company, Chicago, Ill., item 1, \$35.677.

The Laidlaw-Dunn-Gordon Company, New York, has been awarded contract for the air compressor and accessories for the Bremerton, Wash., Navy Yard, at \$27,000.

The Compressed Air Machinery Company, San Francisco. Cal., has been awarded contract at \$1678 for installing a 150-hp. boller in the pumping station at Fort Miley, Cal.

Under bids opened May 19 for machinery for the navy yards, the Chicago Pneumatic Tool Company, New York, has been awarded class 36, 12 electric drills, \$1233.

Under bids opened June 9 for machinery for the navy vards, the Frevert Machinery Company, New York, has been awarded class 71, one motor driven grinder, \$364.

The following awards have been made for supplies for the

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened June 8, Circular No. 442:

Manning, Maxwell & Moore, New York, class 10, one casting grinder, \$48.
Henry R. Worthington, New York, class 12, two duplex steam pumps, \$967.

The following awards have been made for machinery for the navy yards, bids for which were opened June:

Pratt & Whitney Company, Hartford, Conn., class 11, four screw cutting lathes, \$1172.

Niles-Bement-Pond Company, New York, class 31, two radial drilling machines, \$1719.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 32, one cutter and reamer grinder, \$550.

First Ore Cargo for the Wickwire Furnace.-Wickwire Steel Company this week received its first consignment of ore at the docks of its new blast furnace plant, now nearing completion on the Niagara River just north of Buffalo, by the steamer Kensington from Duluth. It is expected that the furnace will be put in operation about September 1, and before navigation closes the company is to receive 350,000 tons of ore. An interest has been purchased by the company in the steamers Caledonia and Italia, and these boats will be placed in commission at once to bring forward stock ore. A contract has also been given to John G. Borland & Co. of Buffalo to bring 140,000 tons of ore down the lakes to the new plant before the season closes.

Press reports that the Youngstown Sheet & Tube Company, Youngstown, Ohio, has received large orders for pipe lines for delivery in California and Oregon, which would keep its pipe mills in full operation for the next 12 months, are absolutely untrue. The reports probably arose from the fact that recently Geo. E. Day, secretary and general sales agent of the company, and H. W. Hock, superintendent of the pipe department, made a visit to the California oil fields to investigate the situation and become acquainted with the trade in general on the Pacific Coast. Mr. Hock has returned from the coast and Mr. Day is on his way home, making stops in different large cities, and expects to reach Youngstown early in July.

The Westinghouse electric interests in Germany are stated to have formed a combination with the Bergmann Electric Company of Berlin, whereby the latter will install the Westinghouse electric traction system in that The Prussian State Railway Administration country. has decided to electrify the steam railroads, \$12,500,000 having been appropriated to begin this work. The Bergmann Electric Company is a semi-American concern, as the head of the company, Sigmund Bergmann, was the partner of Thomas A. Edison for a number of years. The company has works in Berlin, employing 5000 men.

The Arthur Koppel Company, Koppel, near Beaver, Pa., recently made shipment of 200 mine cars to the Copper Queen Consolidated Mining Company, Bisbee, Ariz. The cars are side dumping and specially designed for this work. The Koppel Company is building six dump cars of the three-body standard gauge type, each of 12 cu. yd. capacity, for a Western railroad.

The Standard Iron Company's furnace at Goodrich, Tenn., which has been out of blast since late in December, will be blown in about July 1 on foundry iron. The capacity is 50 tons a day.

HARDWARE

W HILE something has been accomplished in the way of inducing the catalogue houses to refrain from quoting unreasonably low prices on special or trademark goods, there is still ground for complaint in this regard. It may indeed be said that the naming of low prices on such articles in a certain way operates to the manufacturer's advantage, as it results in a larger sale than there would be if materially higher prices were quoted. The publication of a low price in catalogues which are scattered broadcast establishes, however, a general price which yields a narrow margin of profit to the retail merchant. Under such circumstances he is tempted to stop selling the goods in question or at least takes little interest in them, and perhaps pushes something else that pays him better. This is a matter which should continue to receive the careful attention of manufacturers whose goods are handled by the great retail mail order houses. While the human nature which is dominant in the control of the catalogue houses will resent anything like dictation, it will be found that reasonable requests, courteously made, will often result in a prompt correction of the trouble. This suggestion is made in view of the success of recent efforts in this direction.

Very interesting and suggestive if true is the report given currency in the daily press that a prominent Chicago catalogue house has announced that it will discontinue selling groceries and drugs, on account presumably of the inconvenience suffered from the operation of the pure food law. It will remind the trade that the retail mail order houses, notwithstanding their great business, have their own troubles, and have to reckon not only with the opposition of the merchants and manufacturers, but also with statutes which were enacted without any thought of their bearing upon the business of these houses.

A desire on the part of employers to secure the comfort and well being of their workmen is unquestionably more general than is commonly supposed. The problem, however, is confessedly difficult and is seriously complicated by the fact that injury is likely to result from patronizing the men and giving to them opportunities and facilities which they are able to provide for themselves. It is essential that the self respect of the employees should be preserved and that measures looking to their health, comfort and uplifting should not tend to pauperize them, as is too often the case where charities are unwisely bestowed. Some of the most successful efforts along this line are in connection with clubs or organizations for which the men themselves are responsible and which they conduct under rules and regulations of their own making. The furnishing by the manufacturers of the rooms or building for the men, with a few fundamental restrictions, as for example, that there shall be no drinking or gambling, leaves ample scope for the activities and ability of the men in directing the affairs of the club, in which, as an institution of their own, they can take a genuine pride. This is much better than to thrust upon them comforts and refinements in the providing of which they have no part. How best to secure the welfare of employees is one of the problems of management, the responsibility of which cannot be evaded and the proper recognition of which adds dignity to the position of the manufacturer, for there are thus put within his reach opportunities of broad and permanent usefulness.

Condition of Trade.

Whether the season, so far as climatic conditions are concerned, is early or late, there is general agreement that the mid-summer dullness is here a little in advance of schedule. Whatever may be the feeling suggested by current business a good deal of satisfaction is expressed that a retrospect of the past eight months shows many dangers and disasters escaped, while a look into the future finds in the prospects for great crops an admirable foreground for better commercial and industrial conditions, the coming of which, it is hoped, will not be too long deferred. The proximity of the vacation season also has its part in contributing to the relaxed pressure. While it may be a matter of regret to employers and those in positions of responsibility that trade is less exacting than a year ago they are usually able to take refuge in the consideration that it is, so far as the immediate demands of business are concerned, easier than it was last summer to get away from store or factory and enjoy a respite from business cares. This is especially the case as conditions are such that no important change in their main features is regarded as imminent, the general impression being that the coming months will witness a gradual working out of existing conditions; and, unless the unexpected occurs, without violent upheaval or disturbance of a fairly satisfactory state of things by either a sudden reappearance of prosperity on the one hand or of anything disastrous on the other. It should be said, however, that in some agricultural sections business is reported, especially by the retail merchants, as moving along without material diminution from last year's volume. Such experience is, however, far from uniform, and most retail merchants report, with a good measure of cheerfulness it may be hoped a falling off more or less serious in the volume of their business as compared with last June. Meanwhile it is to be noted that the preparation which is being made for better times is constant, but very gradual. Little by little the finances of the country at large, and it may be assumed of individual business houses generally are getting in better shape. Stocks certainly are constantly being depleted, and will soon, if the present process be continued, be very small. From week to week there are a good many recessions in price, few of which are violent, and most of them of only moderate extent. There are indications on many sides of a returning confidence and a renewal of enterprise, still however on conservative lines. Taken all in all, the existing situation gives little ground for complaint and still less for apprehension. The first half of 1908 has made a good record when all the circumstances are considered, and will serve as an admirable prelude to the months to come in which great harvests are to be gathered, to be followed by an era when labor will again be generally employed, and merchants and manufacturers busy in taking care of the wants of a prosperous people.

Chicago.

Coming at a time when the Hardware trade is, under any conditions, seasonably dull it was hardly to be expected that the recent reduction in price of Wire and Nails would be followed by an immediate rush of new business. The cut made was in the first place too conservative to invite speculative purchases, and, moreover, the present rate of consumption is not rapid enough to compel increased buying for actual needs. While the total volume of business for June will doubtless show some

falling off, as compared with May, the result will be accepted with equanimity by the trade, since it is realized that the industrial problem involved in the present situation is one that requires the exercise of courageous patience. One by one, however, the doubt breeding uncertainties which retard commercial progress are being settled. Recent favorable crop reports have done much to inspire confidence, for with the outpouring of another bountiful harvest must come a stimulus whose potent force will be felt in every line of business. Another element of political uncertainty having a more or less direct influence upon industrial developments has been disposed of in the recent Presidential nominations made at the Chicago convention. The deep seated conviction in the public mind that following the November elections, when the political issues will have been definitely settled, there will be a positive forward movement in trade activities, will go far toward establishing that feeling of confidence which is a necessary prerequisite to this much desired result. It is evident that buyers, both retail and wholesale, are not disposed to consider more than their immediate requirements in placing orders, and no immediate change in this respect is in prospect. tional activity of noteworthy prominence is not observed in any special line of goods, save that Lawn Mowers have been in relatively better demand than other seasonable goods. Dealers also state that in addition to a fair run of second orders there has been a gratifying increase in the demand for the better grades of Mowers, indicating a tendency among users to give more consideration to quality. A belated demand for Garden Hose is beginning to make its appearance, but its extent will be largely determined by future weather conditions which, up to this time, have been decidedly unfavorable to its sale.

NOTES ON PRICES.

Wire Nails.—In view of the present condition of trade in general the business received by the mills is regarded as of fair volume. Orders are restricted to immediate requirements, which are light, with no immediate indications of a change of policy in ordering. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Galvanized Nails are quoted at \$1 over the price of the regular Nails.

New York.—City business is comparatively quiet, while that from near-by points is somewhat more active. A few out of town merchants who had been buying in small lots at store, have ordered carloads since the reduction in price. This is not at all general, however, and the volume of business is light. Nails are being held on the basis of \$2.40, in small lots at store, with occasional concessions of 5 to 10 cents per keg.

Chicago.—Although buyers are restricting their orders very closely to the immediate demands of the trade a fair amount of such business, considering the usual seasonable dullness, is being entered by the mills. Under existing circumstances it is unlikely that there will be any immediate change in the situation as respects the attitude of buyers. Confidence in the stability of present price levels and improved demand will probably precede a change in the present hand to mouth order of buying. Quotations are as follows: \$2.13, in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The recent reduction of 10 cents per keg has not as yet stimulated demand, which is still confined to small lots for current needs. Jobbers do not show any inclination to stock up beyond requirements, being of the opinion that present conditions do not justify them in anticipating future needs. An increase in demand for Wire Nails is expected early in August for the fall trade, but the general belief is that July will be a quiet month. The mills are able to make spot shipments on orders, and we are advised that prices are being maintained. Quota-

tions for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in $10~{
m days}$:

Cut Nails.—The quietness which has characterized the Cut Nail market continues, while prices have not regained the position held before the recent reduction in Wire Nails. Iron Nails, made from Muck Iron or Wrought Scrap, are in more demand in the Western section of the country than in the Eastern, and command an advance of about 10 cents a keg over Steel Cut Nails. Eastern buyers as a rule are unwilling to pay the difference ip price, and the preference is usually given to the Steel Nails. The price for Steel Nails at mill is reported to be a \$1.75 base, with the probability that it would be shaded for desirable orders, small lots being held at \$1.80 to \$1.85, base, at mill.

New York.—No increase is noted for Cut Nails in the local market and orders are for small quantities. Cut Nails are held on the basis of \$2.15 per keg for small lots at store.

Chicago.—Prices have declined in ratio with the recent reduction in price of Wire Nails, but are not established on as firm a basis as the latter. The demand is exceedingly light, and in consequence jobbers' stocks are reduced slowly, necessitating but infrequent orders for replenishment. Prices are revised and Chicago quotations are about as follows: In car lots to jobbers, Iron Cut Nails, \$1.98; Steel Cut Nails, \$1.93; in small lots from store, Iron Cut Nails, \$2.10; Steel, \$2.05.

Pittsburgh.—Orders being placed are few and are still confined to small lots for actual needs. Jobbers still decline to buy ahead, and claim that present conditions of the market justify their course. We quote Steel Cut Nails at \$1.75, at mill, but on a desirable order this price could be shaded. Small lots are held at \$1.80 to \$1.85, at mill. Iron Cut Nails are quoted at about \$1.80, at mill.

Barb Wire.—The volume of new business being received by the mills is exceeding light, owing to the advanced season, and no improvement is anticipated at present. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	\$2.10	\$2.40
Retailers, carload lots	2.15	2.45
Retailers less then carload lots		2.55

Chicago.—Mid-season dullness, in which under normal conditions trade is usually inactive, rules in this commodity. There is practically no new buying and not much is expected for 30 days, at least, when the new season opens. Crop conditions hold promise of a generous demand when fall trade begins. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—This is the off season of the year in this trade, and the fact that very few orders and for only small lots are being placed is not construed by the mills to be other than the natural result of present conditions. A fair amount of tonnage is being placed, but not much betterment in demand is expected for some little time. We are advised that prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	\$2.10	\$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—Demand continues quiet and is likely to continue so until purchases are made for the fall season. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos 6 to 9	10	11 :	12 & 12	14 13	14	15	16
Annealed\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized 2.10	2.15	2.20	2.25	2,35	2.45	2.85	2.95

Chicago.—Governed largely by the requirements of fence makers, the demand for Plain Wire reflects the quiet movement of Barb and other fencing. Except in so far as it influenced the placing of waiting orders, the recent reduction in Wire prices did not stimulate buying. In view of the excellent crop prospects manufacturers are hopeful of decided improvement when the new season opens. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—The recent reduction of \$2 a ton has stimulated demand to some extent, and in the past week local mills have entered some good sized orders for Fence Wire, showing that the farmers have again resumed Fence building, and that jobbers are buying more liberally to replenish broken stocks. The mills anticipate a moderate volume of business for the next two or three months. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Vitrified Sewer Pipe.—The market on Standard Sewer Pipe and Fittings is in an unsatisfactory condition from manufacturers' standpoint, owing to animated competition for the little business in sight. While no change has been made in prices, to obtain desirable orders concessions are quite freely made from regular discounts which are as follows on carload lots of Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:

 First-class
 87 %

 Second-class
 90 %

Casters.—Slightly lower prices are reported on Casters. The market may now be represented by the following discounts: Bed, 65 and 10 to 70 per cent.; Plate, 60 to 60 and 5 per cent.; Philadelphia, 70 and 10 to 75 per cent.

Hatchets.—Some uncertainty is felt regarding the future course of the market on Hatchets, which has for some time presented a pretty regular appearance. A feature of the situation is the appearance in the Hatchet field of a well-known manufacturer of Axes, the effect of which remains to be seen. There is also a possibility that manufacturers may think it unwise to continue working along the lines which they have been following. A conference is being held in this city as we go to press.

Nuts.—A formal decline has been made in prices on Cold Punched Nuts, which may now be quoted as follows:

															Off list.
Squa	ire .						 					 	0		5.40 @ 5.50
Hex	agon					 		0				 	۰	0	6.00 @ 6.10
Squa	re C.	T.	&	R								 			5.80 @ 5.90
Hoy	non	0	733	R.	D										6 60 @ 6 70

Prices on Hot Pressed Nuts remain nominally unchanged. As in the case of Bolts, concessions on Nuts will be made by most manufacturers to secure business.

Coil Chain.—There is a continuance of the unsettled condition which has for several months prevailed in the Coil Chain market. Prices are irregular and very low quotations are named in efforts to secure orders of any account.

Spooled Wire.—Quotations on Spooled Wire have some irregularity and a downward tendency. The Tinned and Annealed are quoted on a base of 75 per cent. and the Copper and Brass on a base of 70 per cent. Beyond these base discounts further concessions are obtainable.

Sad Irons.—Declines in raw material are reflected in lower quotations on common Sad Irons. A quotation of \$2.50 to \$2.75 per 100 lb. may be named as representing the market in a general way for small lots, factory shipments being given a lower figure, which varies with quality of the goods and the special circumstances.

Bolts, Common Carriage and Machine.—While there is little material change in the situation, the Bolt market seems a trifle weaker, concessions formerly confined to the very largest buyers being offered with less discrimination. Leading manufacturers are acting conservatively in the

effort to maintain an appearance of regularity, but the prices which they recommend must be regarded as somewhat nominal. Many are apparently desirous of booking orders and inclined to make concessions to buyer's views when the narrow margin of profit will justify it.

Asbestos.—The market for Asbestos products, in some of the heavier lines, has experienced a decline, the prices in many instances depending in a measure on the necessities of producers. The stronger houses, manufacturing specialties also, peculiar to themselves, are holding Mill Board at about 3 cents per pound, while as low as \$2.35 to \$2.40 per 100 lb. has been made in large lots by other makers. Asbestos Paper regularly is held at about 2½ cents per pound, but this also has been cut in some instances to 2 cents in large blocks. Wick and Rope Packing for several reasons seems to show no diminution in price, it being held at 20 cents per pound in any quantity. Asbestos Material is approaching the basis of several years ago when raw stock and labor was much lower.

Copper Products.—Sheet Copper is still nominally 17 cents per pound base, but it has been sold at much lower prices, largely by Western mills. There is also quite a concession in the price of extras, varying from 15 to 25 per cent. discount from the list. Copper Rods, round are held at 15½ cents, rectangular Rods, 16½ cents; Copper Tubes, base, 18 cents; Brass Rods, 14¾ cents; Brass Wire, 15½ cents, and Sheet Brass, 14½ cents, base, per pound. There is very little doing, every one apparently waiting for a turn in the market, when, with some advances, it is expected buying will become more active.

Window Glass.-Additional Glass factories have closed down during the week, and July 1 will probably see nearly all of the hand operated factories out of blast. except a few that purpose making Glass throughout the Workmen have already begun dropsummer months. ping out of factories on account of the heat, and it is questionable whether enough men can be induced to remain at work to fully man all departments in the different factories that expect to continue operations. It has been estimated that stocks carried by hand operated factories do not now exceed 500,000 boxes, and that the American Window Glass Company may have an equal amount on hand, making the total stocks in the hands of all producers about 1,000,000 boxes. This, with stocks in jobbers' hands, is regarded as sufficient to meet all demands during the summer and early fall. Reports from different sections indicate that Window Glass has been purchased by retail merchants at 90 and 40 to 90 and 40 and 5 per cent. discount on Single, and 90 and 45 to 90 and 50 per cent. discount on Double Strength. At a meeting of the Eastern Jobbers' Window Glass Association, held last week, the following prices were recommended: New England and New York Metropolitan District, 90 and 30 per cent. discount for Single, and 90 and 35 per cent. discount for Double Strength: Eastern and Southern States, including the Carolinas, 90 and 35 Single, and 90 and 40 per cent. discount for Double Strength; extreme Southern States, including Florida, Georgia and Alabama, 90 and 30 for Single, and 90 and 35 per cent. discount for Double Strength Glass.

Rope.—No revival of interest has been manifested in the Rope market during the past week and conditions remain much the same as previously noted. The demand is very moderate and buyers are keeping stocks down to the lowest possible dimensions. Quotations on Hemp remain unchanged. The Rope market is not very firm at the following quotations: Pure Manila, 10 cents; Pure Sisal, 7 cents; No. 1 Jute, ¼-in. and up, 5¾ cents; No. 2 Jute, ¼-in. and up, 5¼ cents.

Linseed Oil.—The market is a little easier as a result of a moderate demand both in the way of prompt and nearby delivery. Crushers are not soliciting contract orders covering a long period of deliveries, as the future of the Oil market is too uncertain to offer them inducements to take risks. The demand is largely restricted to small lots for immediate delivery. Local quotations are as follows: State and Western Raw, 42 to 44

cents; City Raw, 44 to 45 cents per gallon. Boi & Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—Operators at Savannah continue to keep prices from going below 40 cents, despite the lack of active buying and large receipts. In the local market the demand is of a hand to mouth character, while manufacturing interests are commencing to cut down purchases for the summer months. The New York market is represented by the following quotations: Oll Barrels, 42½ to 43 cents; Machine Made Barrels, 43 to 43½ cents.

Automobile and Bicycle Supplies.

N interesting addition to Hardware trade literature is furnished in a new Automobile and Bicycle Supply catalogue recently issued by Hibbard, Spencer, Bartlett & Co., Chicago. Many wideawake Hardware merchants are gradually and progressively extending their lines of Automobile Supplies, which are found to embrace many articles that can be conveniently and profitably handled in connection with Hardware stocks. It is not intended, nor is it practicable to carry Heavy Engine and Machinery Parts, this being the province of the garage and manafacturer; but there is a growing number of Accessories which are more easy of access to the cross country tourist in Hardware stores than elsewhere, and as soon as it is understood that they can be found in such stores the trade will profit by this new patronage. will, of course, be only the simpler needs that are thus served in the beginning, but there is even more room for development here than was the case with Bicycle Acessories, which have long found an established place in Hardware stocks. The catalogue above referred to is 91/4 x 12 in., with paper covers, and contains 63 well illustrated pages, in which are listed and described 1908 models of Hibbard, Ajax, Mars and Oriole Bicycles, 1907 Hibbard Motor Cycles and an extensive assortment of supplies for both Bicycles and Automobiles. The latter include Carburettors, Oilers, Dry Batteries, Tires, Patching, Rubber Tire Lacing, Lamps, Liquid Rubber Cement, Chain Lubricants, Sparkers and Spark Coils, Spark Plugs, Ammeters, Indicators, Timers, Speedometers, Clocks, Windshields, Tires, Chain Tire Grips, Horns, Goggles and Automobile Repair Kits and Wrenches. those interested in such goods, the catalogue will prove a useful reference book.

Pittsburgh Screw & Bolt Company.

THE PITTSBURGH SCREW & BOLT COMPANY, Pittsburgh, Pa., manufacturers of Machine Bolts, Boiler Stay Bolts, H. P. and C. P. Nuts, Set and Cap Screws, Special Finished Work, &c., has taken advantage of the recent depression in business to make some large additions to its plant, including a steel frame building 100 x 100 ft. in size, which will very much increase the capacity for cold work. Since the business of the company was established in Pittsburgh, it has steadily grown and it now occupies the entire square bounded by Liberty avenue, Penn avenue, Twenty-fourth and Twenty-fifth streets. The officials of the company are John R. McGinley, president; Thomas W. Smith, vice-president and treasurer, and Wm. G. Costin, vice-president and general manager.

LEE & UNDERHILL, 98 Chambers street, New York, manufacturers and wholesalers of Sporting Goods, will act as salesmen for the National Arms & Stamping Company, maker of a single pattern of juvenile adjustable steel wheel sidewalk Roller Skates, which can be advantageously retailed at 50 cents per pair. The Skates have the extension principle for adjustment to varying lengths of foot, black leather heel and toe straps of excellent quality with tongued buckles. This line of Skates has been recently put on the market and they are especially adapted for use on sidewalks, asphalted streets and similar surfaces.

EDWARD H. KEATING, formerly with the Joseph Woodwell Company, Pittsburgh, Pa., and later with the Schwabacker Hardware Company, Seattle, Wash., has located in Denver, Colo., and is now connected with the George Tritch Hardware Company of that city.

An Eastern Merchant's Alphabetical File.

DESCRIPTIONS have recently appeared in our columns of several interesting features of the Hardware store of J. R. Gladwin, Westfield, Mass. The accompanying illustration shows an original and convenient file used by that merchant for the accommodation of graphophone records. In passing it may be noted that Talking Machines are now handled by many Hardware merchants all over the country, especially those who make a good deal of their Sporting Goods department. The former line is frequently connected with the latter and forms a popular and profitable off season specialty.

Such a file as that illustrated is very simple and easily constructed, but obviously might be successfully



Alphabetical File Constructed by J. R. Gladwin, Westfield, Mass.

applied to a variety of purposes. The horizontal shelves may be made as long or as wide as desired for the purpose in mind, and the width of the vertical compartments may be regulated accordingly. The latter are formed by cutting gains in the shelves and inserting thin partition boards, as will be clear from the reproduction. A different compartment may be devoted to each letter, or two or three letters may be grouped, as in the present case. A feature of this file is that the letters on the upper shelves apply also to the lower, the compartments of the former containing vocal records and the latter instrumental. Methods of applying this idea to files for other purposes will readily suggest themselves.

AMONG THE HARDWARE TRADE.

Ruby Valley Mercantile Company, Laurin, Mont., which handles Heavy Hardware, Stoves, Implements, Paints, &c., has disposed of the Dry Goods and Grocery departments of its business.

Bailey & Cathcart, Brock, Neb., have just completed an addition to their store building. It is of iron clad construction, 40 x 66 ft. in size, and affords the firm increased space, which was greatly needed.

Thompson Bros Hardware Company, Memphis, Texas, has succeeded to the general Hardware, Stove, Implement, Vehicle, plumbing and Sporting Goods business of Thompson Bros.

The Hurdland Hardware Company has been incorporated in Hurdland, Mo., to deal in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Harness.

The Rosenthal Hardware Company, Batesville, Ark., wholesale and retail Hardware, Iron, Steel, &c., has amended its articles of incorporation reducing the capital stock from \$50,000 to \$25,000.

Hines & Prentice have succeeded to the Hardware, Stove, Implement, Paint and Sporting Goods business of J. D. Hines, Meriden, Kan.

KEEPING RECORD OF STOCK.

F OR the past four years a coal mining and steel manufacturing company has had in successful operation the system for keeping a record of stock herewith described. Record cards 4 x 6 in. in size are used, ruled and printed as in Fig. 1. Each article or size of article is given a separate record card, the one illustrated being devoted to ¾ x 4½ in. Machine Bolts with Hexagon Nuts. "Ave. Cons.," in the upper right hand corner of the

"Ave. Cons.," in the upper right hand corner of the card, means Average Consumption, this entry being made at the end of the year, when the monthly average is taken of the material used.

The card shows that the record is kept in the form of a ledger; for instance, Bolts are debited with the quantity received and credited with deliveries. As receipts and deliveries are entered the day after goods are received or delivered, the exact balance on hand may be struck at any time.

The Record Shown on the Card

is for the entire year of 1907. The first division to the left is used for entering dates on which stock was received, from whom purchased and the different quantities. The rest of the card is used to record the number

87	OCK RECEIVED				Investment land		ON REQUE		-		-
Bala	From Whom	Overthy	Date	To Whom	Quantity	Date	To Whom	(mantite)	Depte	To Whom	Quantil
1.100	Street		My.	Avi	146	12/2	Merc		1		
9/107	Stew 70	Jan	1/2		1	24	20 1	:50		-	
4/5/07	. 00	140	4/4			3/0		100		1	
17/02	4 3/29	100	1/4	R. 1	7.	%	40	- 6			
98/07		200	12	40		24/	Mad	100			-
1		900	39/	79.3	-	%		- (1		-	
	an dans	114		RN.	24	14	20 5	- 50	-		

Fig. 1.—Card for Keeping Record of Stock.

of Bolts given out on requisitions and to whom. The receipts of goods are taken either from the receiving clerk's daily report or from invoices, provided they are vouchered immediately upon receipt of goods. Deliveries are taken from the shipping clerk's daily report.

The Card Index

has 600 guide or index cards, and more than 3000 record cards, upon which approximately \$80,000 of stock is recorded, covering all material used in the plant. It re-

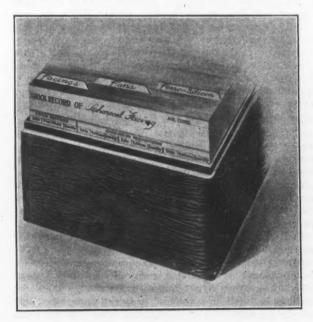


Fig. 2.—Arrangement of Guide and Record Cards in Box.

quires a clerk four hours of each working day to keep the record up to date. It has been found desirable not to have more than five or six record cards to each guide card. It will be recognized that in a manufacturing business it is not necessary to carry a complete assortment of any line of goods, but that certain standards in the various lines would cover all requirements. The same system may be applied to stocks of Hardware and kindred lines which would require a much larger card index.

The Arrangement

of the guide and record cards is shown in Fig. 2. Three colors of guide cards are used—pink, blue and buff. The heading "Facings" is on a pink card, "Fans" on blue and "Ferro-Silicon" on buff, the colors being repeated in the same order in successive rows. In front of the guide card "Facings" are record cards for Cream Soapstone, Charcoal, No. 2 Silver Lead, Ingot Mold and Sea Coal Facings, these being the different kinds required in the plant.

A Few of the Headings Used.

Following is a list of the headings on guide cards, from Fac to Lub:

Fans,	Glue Pots,	Hydrant,
Facings,	Glue,	Ink,
Ferrosilicon.	Glass,	Injectors,
Ferromanganese,	Glasses.	Iron.
Felspar,	Globes,	Jacks,
Felt,	Gongs,	Jaws,
Ferrules,	Graduates,	Japan,
Figures.	Grease,	Knives.
Files,	Graphite.	Knobs.
Fishplates,	Grindstone,	Lamp Black,
Fillett,	Grabs and	Lamps,
Fluorspar,	parts,	Lamps (Safety).
Flour,	Grates.	Lacing,
Flanges.	Hack Saws and	Lanterns,
Forgings,	parts.	Lagging,
Forks,	Hammers,	Lathe,
Frames,	Handles,	Latches,
Frogs and points.	Hatchets.	Level.
Funnels,	Hay,	Leather.
Fuse,	Hemp,	Linings,
Gaskets.	Heaters,	Lime,
Gasoline,	Headlights,	Linen (tracing),
Gauges,	Hinges,	Links (railway),
Gears.	Hooks,	Locks,
Glands,	Hose,	Lubricators.
Gluetrin,	Hoists,	

The First Step

necessary in installing a record of this kind would be the taking of a detailed inventory of all material on hand, which would be entered on the cards. If desired, a column could be added on the right hand side of the card in which the balance on hand could be shown. Among the advantages which have resulted from the use of this stock record by the company are the following:

Purchasing agent can tell at any time what quantity has been received to date.

When requisitions are sent to him by the warehouseman he can ascertain the quantity required to order for stock for any period.

He can find the quantity of any article purchased from any particular firm during the year.

He can obtain the quantity on hand at any time.

It is also advantageous to the manager, as he can always be in touch with the consumption of any article in any part of the plant. It has been proved in a number of instances that the consumption of certain lines of goods could be considerably cut down. For instance, the company has been able to decrease its Oil and Waste consumption by 25 to 30 per cent.

The Burrows Hardware Company, Beeville, Texas, handling Hardware and Agricultural Machinery, has been incorporated with a capital of \$40,000 under the State laws of Texas. The business, which was formerly owned by Burrows Brothers, has since 1890, when J. C. Burrows became sole owner of the present business, been run under the present title. The business will be conducted under the management of J. C. Burrows, as heretofore. The officers of the company are J. C. Burrows, president; B. P. Stephenson, vice-president; C. E. Williamson, secretary and treasurer.

J. S. Wallace of the firm of Yeates & Wallace, Starkville, Miss., has sold his interest to Zeno Yates, who will continue the business at the same location, handling Hardware, Stoves, Tinware, Agricultural Implements, Buggles, Wagons, Glass and China Ware.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

FLINT & WALLING MFG. COMPANY, Kendallville, Ind.: Illustrated Catalogue No. 57 describing in detail the Star Steel Back Geared Windmill, Model 7, together with Pumps, Tanks, Parts and Fittings, &c. The booklet is an attractive one intended for distribution among farmers and other consumers, and contains information of value to any one interested in the subject.

ALASKA FREEZER COMPANY, Winchendon, Mass.: Illustrated catalogue of Alaska and North Star Ice Cream Freezers, Parts, &c.

Buffalo Scale Company, Buffalo, N. Y.: Illustrated catalogue and price-list, No. 500, covering an extensive line of Scales for all purposes.

CHANDLER & BARBER, Boston, Mass.: Illustrated Catalogue No. 9, referring to a complete line of Tools and Equipment for educational manual training with special reference to manual training schools and the requirements of the Sloyd system.

HABTWELL BROTHERS, Chicago Heights, Ill.: Illustrated catalogue and price-list of Hand Made Hickory Handles, Hickory, Ash and Oak Handles, &c.

CHICAGO DRYER COMPANY, Chicago: Catalogue No. 11, illustrating Chicago Sun Clothes Dryers for lawns, roofs, balconies, porches, drying rooms, &c.

MARSHALLTOWN DROP FORGE COMPANY, Marshalltown, Iowa: Large display card illustrating and describing several of the company's Drop Forged Tools.

Samuel Winslow Skate Mfg. Company, Worcester, Mass.: 1908 illustrated catalogue of Ice Skates, illustrating and listing complete line and giving full information in regard to ordering; also attractive illustrated booklet referring to Roller Skates.

CLEVELAND TWIST DRILL COMPANY, Cleveland, Ohio: Illustrated circular and price-list referring to perfect double tang Sockets, which are said to prevent twisting off the tangs of taper shank tools and permit using tools with broken tangs.

NOVELTY IRON WORKS, Sterling Ill.: Illustrated catalogue of Porcelain Lined Cylinders for wood and iron Pumps, Iron Trimmings for wood pumps, Automatic Stock Fountains, Lawn and Cemetery Vases, Registers, Engine Grates and Gray Iron Castings.

JOHN LUCAS & Co., Philadelphia, Pa.: Descriptive price-list, including color cards, referring to a complete line of Paints and Varnishes for all purposes.

LETTERS FROM THE TRADE.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

A Window Display Criticised.

To the Editor: In your issue of the 18th inst. you illustrate a hardware show window display which struck me as very poorly got up, and I should like to know the opinions of others in regard to it. Who ever sells or displays hand sleds, skates, wheelbarrows and toy wagons (winter and summer goods) at the same season of the year?

Do table ware, chafing dishes, rifles and shotguns make a good combination for a display? Also wheelbarrows, machinists' tools and nickel plated ware?

Hand sleds and skates are not used when grape vines or trees are in leaf. This window trimmer certainly tried to put a sample of nearly every article in the store in one window.

Wisconsin.

Trade Items.

Nelson Lyon, secretary-treasurer of the Holt-Lyon Company, Tarrytown, N. Y., sailed on the Mauretania on the 24th inst., for an extended business trip to England, France and Germany. Mr. Lyon will visit these countries in the interest of the Egg Beaters, Carpet Beaters and other specialties manufactured by the company. We understand that a good demand for the Beaters has already been established in England.

JOHN DOUNAN of the W. S. Dounan Hardware Company, Richmond, Va., has been tendered and has accepted the position of secretary-treasurer of the Southern Hardware Jobbers' Association. The organization is to be congratulated on securing the valuable services of Mr. Dounan, who is a prominent and influential member of the association and who served most efficiently as president during the past year.

THE MARLIN FIRE ARMS COMPANY, New Haven, Conn., has issued a very attractive wall hanger, presenting a reproduction of an oil painting by Muss-Arnolt, depicting the flight of ducks at the close of the day, and showing two sportsmen in an old dug-out, with decoys well placed, taking toll of the passing flocks. A copy of the hanger will be sent postpaid on receipt of 10 cents in stamps.

IN a circular letter dated 15th inst., addressed to the members of the Michigan Retail Hardware Association, C. M. Alden, Grand Rapids, president, refers to business conditions and the outlook. A confident position is taken as to future trade, and merchants are urged to conduct their business with enterprise and energy.

The 1908 Implements, Vehicles, &c., has been issued by the publishers of Farm Machinery, St. Louis. Mo. The first 284 pages give the kinds of goods, with their trade names, manufacturers and addresses. A Vehicle section relates to various kinds of Vehicles, including Automobiles. Appendix A, pages 302 to 369, groups the manufacturers by States and towns alphabetically, with brief references to principal lines, while Appendix B, pages 372-478, contains another arrangement of branch, jobbing and transfer houses for the sale and distribution of Implements, Repairs, Wagons, &c., by States and towns alphabetically. The last schedules enables buyers instantly to locate the nearest distributers of a given line.

IWAN Bros., Streator, Ill., manufacturers of Post Hole Augers and Diggers, Drain and Mining Tools, &c., are calling attention to their 12 and 14 in. Augers which differ somewhat from smaller sizes and are especially recommended for telephone and electrical companies and others requiring an Auger for large holes. The handles of these Tools are usually 5 ft. long or more, the 14 in. Auger weighing about 24 lb. and taking out about a foot of earth at each filling. While one man can operate this large tool, it is better for two to work it in stiff soil.

THE YALE & TOWNE MFG. COMPANY, 9-15 Murray street, New York, is having its enlarged quarters at this address thoroughly renovated, this being largely necessitated by the water damage resulting from a fire in one of the upper stories of the building more than two months ago. An important detail of the work is the rewiring of the whole building according to the latest practice to prevent fire from defective electrical insulation. In addition to the entire first floor above the street and other portions below previously occupied, the removal of Wiebusch & Hilger has enabled the company to secure a large amount of additional room on the second floor, which has direct connection with the main offices, the new space being in course of preparation for the company's purposes. This readjustment also provides room for the accommodation of the advertising department, which heretofore has been in a distant part of the building. These changes make possible a more convenient and compact organization which markedly improves the work-

GEORGE F. TAYLOB, manager and secretary of the Corbin Cabinet Lock Company, New York, sailed recently for a pleasure tour of Europe, to occupy about three months.

AUSTRALIAN NOTES.

FROM OUR SPECIAL CORRESPONDENT.

MELBOURNE, May 11, 1908.

QUIETNESS is the phrase which will most accurately describe Hardware trade conditions during the past couple of months. While Australia as a whole has had fairly good rainfalls, the State of Victoria, holding one-fourth of the population of the continent, has had less than half its average fall for the first four months of the year. Country folk have got alarmed and have tied up their pockets rather closely. With good winter rains we shall be all right; without them trade will temporarily slump.

But it is well to note that the other States of the Commonwealth are having a good season, and it is a curious commentary on the vagaries of the clerk of the weather that Victoria, usually the most favored by him, is now under his displeasure. Our geographical position, however, practically assures an early return to better conditions.

Throughout the States there is a good and steady demand for Fencing Wire and allied lines, while building requirements of every kind are in general demand throughout Australia and New Zealand. Indeed, to introduce a personal note, your correspondent, with more than the average share of Australian enthusiasm for Australia, can scarcely reconcile the building activity of the past couple of years with the actual needs of the community. Yet trade was never on a better basis, financial engagements generally were never better kept, and failures are few.

Heavy goods are in fair, general demand for contracts under Government and municipal requirements. Shrinkage is chiefly apparent in household requirements, and can be no more than transitory.

A letter received 24 hr. ago from New Zealand contains the glad news that weather conditions there are once more favorable and everything augurs well for another real good season.

America's Share of Australian Trade.

There can be little danger, in spite of critics, of Australia "looking backward" in trade, unless we get another seven years' drought. And your correspondent has often been puzzled why your country appears to continue content with so small a proportion of Australian trade. One hears a good deal of American enterprise and "hustle," and yet the fact remains that the Hardware imports into Australia for 1906 totaled roughly £45,000,000 sterling, of which America sent us only one-ninth.

This share is surely capable of increase. As a suggestion would it not pay to have a warehouse in each capital city, or at least in Melbourne and Sydney? If a number of firms combined together to share the cost of this, the individual expense would be small. It would never do to sell goods there, the premises could only be used as a sample room for the exhibition of each firm's lines, and as a general bureau of information. The objection may be raised that every American firm possessed with the solid determination to "get in" here already has a representative on the spot, or could send one. True, but he can't be in every place on this big continent at once, and the permanent sample rooms in Sydney and Melbourne would invite numbers of casual callers whom he would otherwise never be likely to hear of

It may be urged that the various lines of American make are stocked by the leading wholesalers. True again. But how far does this apply? Travelers and wholesale salesmen are generally kept full time on stock lines, and their hours of labor are necessarily limited, since the entire day has only 24 in it all told. And new lines are so multitudinous that they cannot always differentiate between the good and the bad.

But the establishment of a central sample room in each of our two chief centers—a sort of American commercial consulate—open for the inspection of wholesaler, retailer or consumer, and with a live man in charge, could not fail to pay for itself almost from the jump.

It would be a permanent exhibition—a permanent ad-

vertisement—a permanent stimulus to trade. There could be no objection to admitting the public, because, boiled down, it is the public—the consumer—who ultimately pays for everything. Convince the consumer, and one's future is made.

The Real Success or Failure of the Scheme

would rest solely on the man in charge, who would need to be a brainy commercial enthusiast of the highest type. A 100-ton gun is potent for defense with brains behind it. Otherwise it has little more value than scrap iron. Our agricultural shows at Brisbane, Sydney, Melbourne and Adelaide are becoming real educational exhibitions each year. No man of even ordinary commercial capacity and with a good line to handle, could possibly exhibit at these annual shows without creating some added demand through the trade for the lines exhibited.

There can be found plenty of objections to the initial ideas laid down above. It would be a departure from precedent. But things move rapidly nowadays. And we don't wait for precedents. It is well to note that the Manufacturers' Association of Great Britain has had its representative, B. H. Morgan, among us lately, inquiring as to the possibilities of further increasing British trade and winning still more of our business.

The general opinion is that, with a few exceptions, American houses are paying less attention to this rising market than formerly. Possibly their home market is taking all they can turn out. So much the better for the Britishers. But—it doesn't seem American!

A new South Wales firm, Henry Vale & Sons of Auburn, have secured the second contract for Wire Netting machinery for the Victorian long sentence prison at Pentridge, near Melbourne. The contract price is £2080 for four weaving machines to turn out 600 yd. of 1½ x 14 x 17 B. W. G. double rolls per day of 8 hr. The Victorian Government are fully satisfied with the result of their experiment in Wire Netting production, and thus utilizing prison labor for public good. What private manufacturers of Wire Netting may think is, as Kipling says, "another story."

The Sydney agricultural show, held at Easter time each year, proved a huge success, the gate money totaling over £8000 in spite of heavy rainfall on what are usually the best days, Good Friday and the following Saturday. These agricultural shows take high rank with our traders as opportunities of making good sales to the country people who usually bring well lined pockets to the inspection of exhibits.

Large public works are progressing in every direction. Irrigation is being tackled earnestly, and large dams are being constructed for water conservation in New South Wales and Victoria. Railroad and tramway extensions are progressing throughout the States and calling for engineering requirements of all kinds.

THE PHILLIP GROSS HARDWARE COMPANY, Milwaukee, Wis., has lately issued an elegantly printed booklet, entitled "What Cupid Whispers to the Bride." Its purpose is "to assist the bride or bride-to-be in selecting such furnishings for her home as are most necessary with the least amount of trouble and expense." An illustrated love story runs through the booklet, interspersing which on alternate pages are references to goods comprised in the comprehensive Gross stock for the dining room, for the kitchen, for the laundry and around the house.

THE COLUMBIA JOBBING HOUSE has opened a salesroom at 441 Third avenue, Pittsburgh, where a general line of Enameled and Galvanized Ware and Tinware will be handled.

Swain Hardware Company, Shawnee, O. T., has been succeeded in the General Hardware and Sporting Goods business by Swain-Hartman Hardware Company.

New England Iron & Hardware Association.

THE annual meeting of the New England Iron & Hardware Association was held at Young's Hotel, Boston, on the 16th inst., following a dinner at which there was a large attendance. The following officers were unanimously elected for the ensuing year: President, A. B. Marble of Jones & Laughlin Steel Company; vice-president, William A. Hopkins of Baldwin & Robbins Company, Inc.; Directors: E. L. Richards, C. F. Bragg, Oscar A. Shepard, Charles W. Sabin, Frank Marvin, C. C. Lewis, George Gray, Charles F. King, Fred L. Greeley. Charles A. Breck was re-elected treasurer and George J. Mulhall, clerk.

The report of the treasurer showed the association to be in a satisfactory financial condition and the clerk's report gave interesting statistics regarding the work of



A. B. MARBLE, President.

the year. During the year the association lost two prominent members by death, John G. Brown of Brown & Wales Company, and Michael McBarron of McBarron & Co. The bureau of credit continues to be a useful feature of the association.

Retiring President Boutwell thanked the members and directors for their hearty co-operation and support during his administration, and, while the meeting was waiting for the Nominating Committee to report, ex-President C. F. Bragg, Bangor, Maine, gave an interesting talk on Porto Rico, which he recently visited. On taking the chair after his election, President Marble expressed his appreciation of the honor and promised the association his best service.

A. B. Marble, the new president, has been connected with the iron and steel trade for the past 22 years, and is district sales agent of the Jones & Laughlin Steel Company, Boston. He is well and favorably known to the trade of New England and New York City, where he formerly resided, and has always been active in the association and particularly prominent in its social activities.

Pittsburgh Emery Wheel Company.

E regret that through a clerical error the products of the Pittsburgh Emery Wheel Company, Park Building, Pittsburgh, Pa., are given inadequate representation in The Iron Age Directory for 1908 recently issued. While the company is classified under Borundum and Adamite Wheels, its name and address should also have been given a place under Emery Wheels, Corundum Wheels and Grinding Machines, of which the company is a prominent manufacturer.

It has been reported that F. S. Lovitt, Colby, Kan., sold his Hardware business recently, but we are advised the negotiations were not consummated and Mr. Lovitt will continue business as heretofore.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM BOWEN BROS., Lenora, Kan., who have bought the Hardware and Implement business of O. M. Elliott & Co.

From S. W. Collins Hardware Company, which has been incorporated with a capital of \$50,000 to conduct a Hardware, Stove, Implement, Paint, Sporting Goods, Mining and Building supply business, with headquarters at Fallon, Nev.

From Otis & Vorse, Wilsey, Kan., who have purchased the Hardware business of Harry Farrar.

From W. A. McKenzie & Son, Goldendale, Wash., whose Hardware, Stove, Paint and Sporting Goods store has been destroyed by fire.

From J. W. McCauley & Co., who have bought out the Hardware, Stove, Paint and Sporting Goods business of Thompson Hardware Company, Marysville, Kan.

FROM BOND-GEORGE HARDWARE COMPANY, San Antonio, Texas, which has been incorporated with a capital of \$35,000, and succeeds to the general Hardware, Stove, Implement, Paint, Vehicle and Sporting Goods business of Bond Hardware Company.

From Cameron Hardware Company, Cameron, Texas, which has been incorporated with a capital of \$10,000 and has bought the plant of Bryant & Bond Company and will continue that business, carrying Shelf and Heavy Hardware, Stoves, Tinware, Paints and Implements. The officers of the company are J. T. Brown, president, Leonard Brown, secretary, and T. E. George, treasurer.

From Chelsea Hardware & Plumbing Company, Chelsea, Mass., which is just starting business and will handle general Hardware, House Furnishing Goods, Electrical and Automobile Supplies, Sporting Goods, Plumbers' and Steam Fitters' Supplies, Marine Hardware, Paints, &c.

FROM H. D. BACHTELL, who has opened a new store at 222 West Fourth street, Waterloo, Iowa, and is handling Shelf and Heavy Hardware, Stoves, Tinware, Sporting and Athletic Goods.

From Stichter Hardware Company, Reading, Pa., whose establishment was destroyed by fire on the 19th inst. The company will resume business and desires catalogues covering general Hardware and related lines.

From Watt & Holmes Hardware Company, Cordele, Ga., about to erect a new block with three stores, one of which will be occupied by the company. The company will be pleased to hear from manufacturers of store fittings suitable for an establishment of this sort.

The regular semiannual meeting of the Board of Directors of the Washington Hardware and Implement Dealers' Mutual Fire Insurance Association of Spokane, Wash., was held on the 27th ult. This company, of which E. W. Evenson, Hutton Building, Spokane, is secretary, was organized in 1905, and its officers are prominently identified with the retail Hardware association movement in that section of the country. The report made under date 27th ult., showed that the insurance in force at that time amounted to \$892,150, as compared with \$689,200 in force on December 16 last. The ratio of expenses to premiums was reported as 12.2 per cent., and the ratio of net losses to net premiums as 10.5 per cent. The return payment on premiums for 1908 is 33 1-3 per cent.

TRADE TRACERS.

BY FAR WEST.

THE plan herewith presented of following up possible customers grew out of observing the number of people who came to the store, and after examining an article repeat to the clerk the stereotyped expression: "I did not want to buy to-day, I was just looking around. I will send in my wife," or husband, as the case may be. Whenever a person enters a store and makes inquiry for an article the clerk has a much better opportunity to make a sale than if the case were reversed and the clerk was in a dwelling soliciting an order. So if a sale is not made the proprietor should know the reason. The plan described not only places this information in his hand, but provides him with a list of names and addresses for future business.

Information Cards

about the size of a postal card are prepared and kept in a convenient place. The clerk does not use them in the presence of the customer, merely jotting down the information at the time and filling the card afterward. To make the use of the cards clear an actual case will be taken. Mr. A——, a stranger to the clerk, comes in to look at Cook Stoves. After the line has been shown to him he stops before a Six-Hole, 18-In. Oven Cook Stove priced at \$24, and the following dialogue ensues:

priced at \$24, and the following dialogue ensues:

CUSTOMER: "I like the looks of that Stove all right,
but they showed me one at Black & White's that looks to

me to be just as good as this for \$20."

CLERK: "It is very difficult to carry in one's eye all the details as to size. If the two Stoves were set side by side a great difference would be seen. Take this casting (lifting a lid); notice the weight and that it measures full 8 in. in diameter. Then we give you a guarantee of a firm that has been selling this same make of Stoves in this town for 13 years, and we can give you the names of 50 people who are using these Stoves. We set up the Stove for you, and if it don't bake and give satisfaction and we cannot make it work, we'll take it back and refund your money."

CUSTOMER: "Well, Black & White are an old firm, too, and they told me Mr. Burns at the Cash Store had one, also Mrs. Smith Jones, and they give a guarantee also. I have bought lots of stuff from them and they are all right."

CLERK: "As you have given them a good share of your trade, let us put up the Stove for you."

your trade, let us put up the Stove for you."

Customer: "I'll have to be shown where that \$4 difference comes in first."

CLERK: "Well, let me present this matter to the proprietor before you decide, and if anything can be done I know he will do it."

The clerk then takes the prospect's name and address, later filling out the card, which is reproduced herewith, and handing it to the proprietor.

Oct. 6,1907. Nr. L. ade,	Remarks.
427 Linden St. In market for 6-18 Diana. Claims he can	mechanic at the Plow shop
B. & W. for \$20.	Result
purchase until Oct. J-P. M. Clork Frank Sum mers.	no sale.

Possible Customer's Tracer Card.

The proprietor now has two propositions to consider. First, the arguments the clerk used, their weak or strong points; second, the tracing of the customer.

Weakness in Clerk's Argument.

He notices an error in the way the clerk presented his argument, showing him that in his broad, general statement that 50 people could be shown who had bought Stoves to their satisfaction, the opposition had gained a point by mentioning two persons' names, which was more convincing because specific. Again, that the castings were not only heavier, but were made of a combination of North and South grades of iron that made them tougher; further, that Black & White had tried their best to get the agency for this line of Stoves. This talk leaves the clerk fortified for the next Stove customer, and it can readily be seen that the continued absorbing of information gained in this way, makes of him a better clerk in every way.

Going after the customer is the next step. The ice is broken and the strongest card is a personal visit from the proprietor. Even if no sale is made the customer will feel flattered by the attention, and good will come out of the experience.

The card is now out of the clerk's hands and into those of the proprietor, who makes such notes on the margin as the occasion requires and files it away, providing in time a list of people that need only the proper attention to make blossom into regular customers.

The use of the information cards should not be confined to the clerks alone. The outside men have splendid opportunities for gathering information. The collector going his rounds and even the delivery man see new work undertaken and gain many pointers that may be turned to profit. The interest shown in the business is indicated by the use made of the cards, and the mere word of approval from the proprietor will be sufficient incentive to keep the working force united and interested in their efforts to bring to the house all the business possible.

FOURTH OF JULY WINDOW EXHIBIT.

BY F. B. M.

The great and attractive exhibit emblematic of the great and glorious Fourth can be made by placing a large imitation of a cannon in the show window. Take a wooden Rolling Pin (the same as used for pic crust) for the axle and hubs of the wheel. Let the handles project beyond the wheel and on each end one inch back draw a lead pencil line around the circumference, spacing this off evenly for the spokes of the wheel. Next take a Gimlet and bore small holes from which the spokes are to emanate. For the spokes, select from stock a number of ½-in, Bits and run just the worm end or point of the Bit into the Gimlet holes already made. If this is done carefully not a particle of harm will be done to the Bits used, so as to hurt their sale after the exhibit is over.

This leaves the square shank end of the wood Bits or spokes projecting outward. The rims of the wheels are formed by placing a link of Iron Chain over each of these Bit Shanks, the loose links of the Chain filling up the intervening space. Sagging of the Chain between the spokes can be avoided by interweaving a stiff piece of Wire.

The barrel of the cannon is made out of Stove Pipe, fastened to the Rolling Pin axle by running two Stove Pipe Rings or Collars over the Pipe, one from each end until they just span the center axle, nailing the under sides of the Rings fast to each side of the central portion of the Rolling Pin.

Now take a piece of board and a Compass Saw and cut out a circular piece of wood just large enough to fit in one end of the Pipe. Bore a hole through the exact center of this piece large enough to take in the spindle of a Door Knob. Screw fast to this a surface Lock, so that the Lock comes on the outside of the board, and the Door Knob projects therefrom. Place in end of cannon and secure in place with a few Tacks driven through the Stove Pipe. Place a small placard in the window as follows:

This is not "a ffint lock Gun"
(As used in the Revolution),
But a modern door lock Gun
Which we just made for fun.

A gasoline Soldering Fire Pot recently exploded in the store of Gough & Snyder, Farmland, Ind., starting a slight fire. The damage was only nominal.

Annual Conference of Sargent & Co.'s Salesmen.

THE regular summer meeting of the selling staff of Sargent & Co., New Haven, Conn., and New York, was held in New Haven, June 16-18, inclusive. The pur-

A HARDWARE DREADNAUGHT.

REPORTS from the Pacific Coast state that the Northern progress of our great float has marked by the appearance of miniature cruisers and battleships in the show windows of retail merchants. Hard-

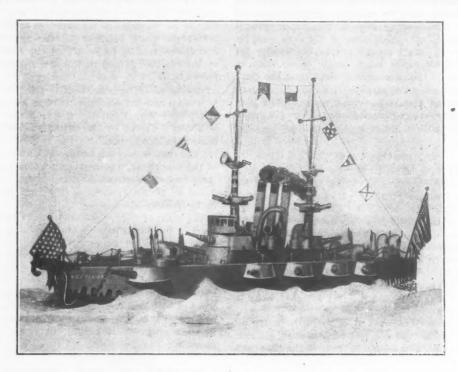


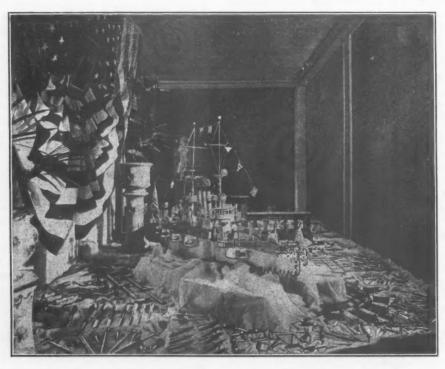
Fig. 1 .- A Hardware Dreadnaught.

pose of these gatherings is to exchange views and experiences, discuss plans for the future and thoroughly acquaint salesmen in regard to what is being accomplished in the factory relative to new goods and improved conditions. The business hours of the three days were devoted solely to commercial matters, but advantage was taken of the evenings for various forms of recreation. There

ware stores are fortunate in handling a class of goods peculiarly adapted to such displays and several houses in the trade had battleships in their windows constructed entirely or in part of articles taken from stock.

A Veritable Dreadnaught

of Hardware battleships is the craft shown in the accompanying illustration, as she lay in the show window



-Hardware Dreadnaught and Surrounding Display of Tools, and Cutlery.

was a banquet on Wednesday night provided by the officials of the company, at which about 100 were in attendance. Informal remarks were made by a number of those present, including President George H. Sargent of the New York house.

of Chas. Brown & Sons, San Francisco, where she was built on the designs and under the supervision of Geo. Meierdierks. The surrounding floor of the window, as shown in Fig. 2, contained an attractive assortment of Tools and Cutlery. Regarding this floating fortress, the

firm writes us that it was complete in every detail and accurate in arrangement. Every part of the ship from waterline to topmast and from stem to stern was made of articles taken from regular stock, and such as are usually carried in a Hardware and House Furnishing Goods store. The following schedule was made up listing the various parts of the vessel in the terms usually applied to them in the navy and the corresponding articles of merchandise used to represent them.

THE CHICAGO	asou to represent them.
Hull of ship.	PARTS OF VESSEL.
	Anchor
At forecastle,	ding Pans and Gem Nozzles. Superimposed turrets Section of 3-qt. Tin Pud- with 12-in. guns ding Pans and plain Brass Hose Pipes. Rubber "Gauge Glass" Gas- Life buoys kets.
At rear of forecastle.	Superstructure 1 (12 x 17) sheet iron Drip Pan. Bridge No. 01 tin Bread Pan (reversed). Wheel Valve Wheel. Military mast 1-oz. and ¼-lb. Spools Copper Wire and ¼-ln. Brass Rod.
	[Upper fighting top3-in, Scolloped Patty Pans. Lower fighting top5-hole tin Mouse Trap (re-
	Guns in upper fighting top
Forward fight, ing tops.	top Brass Gas Pillars, Guns in lower fighting top Shotgun Shells (12 gauge). Searchlight ½-pint Tin Funnel with 1- cp. Electric Bulb. Monkey yard ¼-in. Brass Rod. Truck lights 1-cp. Electric Bulb. Foretopmast stay lifts
	and signal halyards. No. 18 Copper Wire. (Forward cranes 2-lb. bars Solder (bent to
Above super-	shape). Crane falls and cable . %-in. Brass Pulleys and Curtain Cord. Smokestacks 2-in. Leader Pipe (painted yellow with black band at top). Smoke Steel Wool.
structure.	Forward superstruct- ure ventilators1½-in. galv. Ells and Sock- After superstructure ets. ventilators1½-in. galv. Ells and Sock- ets.
	After cranes2-lb. bars Solder (bent to shape). [Mainmast Same as military mast.
After fighting tops.	Main upper fighting
tops.	After turrets Same as forward upper fighting top. Entire 2-ot, Tin Pudding Pan and Gem Nozzles.
Quarterdeck	Ventilators 2-in. galv. Street Elbows. Capstan Floor Door Stop. First whaler and gig. No. 4 Sensible Sad Irons without handles. Boat cleats
	Boat cleats. Galv. flag pole Cleats. Flagstaff Pc. No. 10 Steel Wire. Small boats. No. 4 Sensible Sad Irons (less hdl.) on dayits.
Forecastle	(less hdl.) on davits. Davits Malleable Brass Bird Cage Hooks (bent to shape). Boat falls. ½-in. Jap'd Pulleys and Curtain Cord. Gun sponsons. ¼ of 1-qt. tin Pudding Pans.
	6-in. batteries Gem Hose Nozzles.
Flags on dress- ing line.	American ensign No. 1, International answering pennant, International Z, International B, International H.
	International E. International X.

The firm writes that the model was an excellent advertisement inasmuch as it proved of unusual interest, not only to the visiting officers and men who complimented it highly, but also to the public in general, some of whom were observed to stand at the window for the better part of an hour scrutinizing and comparing the various articles used in the miniature with the parts of a vessel which they were supposed to represent.

E. T. Wilson, Gas City, Kan., has sold his Hardware business to G. P. Lamberton.

The Brown Shade Adjuster.

A simple, convenient and effective device for the ad-

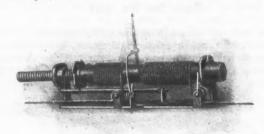


Fig. 1 .- The Brown Shade Adjuster.

justment of window shades made by the Hardware Mfg.

Milwaukee. Company, Wis., is represented in Fig. 1 of the accompanying illustrations, its application being shown in Fig. 2. The controlling cord when pulled releases the escapement ratchet allowing the shade with its roller to be raised or lowered to any desired position where it is firmly held by the adjuster until again released. this manner the shade may be dropped when the upper window sash is lowered as in Fig. 2, giving unobstructed ventilation without the annoyance incident to a flapping shade. The adjuster is adapted to windows of

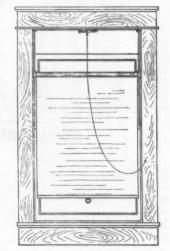


Fig. 2.—Application of Brown Shade Adjuster.

any style or width and requires no special stops. No difficulty is experienced in its operation, as it is as easily worked, it is said, as the curtain on its roller.

Old Hickory and Honest Abe Handles.

The hand made hickory single and double bit axe handles herewith illustrated, carrying the brands Old Hickory and Honest Abe, are the product of the factory of Hartwell Brothers, Inc., Chicago Heights, Ill., and comprise part of a general line of handles for adz, pick, sledge hammer, hatchet and railroad and mining tools made by the company from hickory, ash and oak. To secure material for the best handles only the young, small bodied, second growth hickory trees, 6 to 10 in. in diameter, are selected. More than two cuts are rarely obtained from a trunk, and general only one, and these must be free from defects such as knots, streaks, bird pecks



Old Hickory and Honest Abe Handles.

and the like. The handles are blocked out and hand shaved with a draw knife in the woods and are then sent to the Chicago Heights factory, where they are carefully inspected and finished. After being thoroughly seasoned by exposure to atmosphere in a dry room—not kiln dried—they are sandpapered and highly polished over a fine sand belt, and are then put over a waxing belt, which brings out their whiteness and leaves them with a brilliant gloss. After again being reinspected they are labeled and carefully packed. The octagon and oval double bit axe handles are made in 30 to 36 in., 38 in., 40 in., 42 in. and 44 in. lengths; single bit axe handles are made in 30 to 26 in. and 38 in. lengths. At the buyer's request Honest Abe handles will be packed one dozen

in a carton, an attractive metal edge box. Ten to 20 of these cartons constitute a case.

Saw Set No. 201.

The saw set shown herewith, manufactured by the Goodell-Pratt Company, Greenfield, Mass., has malleable iron frame and handles and tempered steel jaw and anvil. Its construction is such, it is stated, that it can be

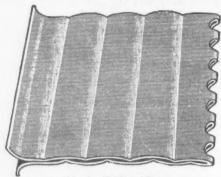


used on saws of any width and has an adjustment to insure the evenness of the set. The teeth of the saw are at all times in plain sight of the operator. The tool is 8 in. long, polished and nickel plated, each one packed separately in a pasteboard box.

Lincoln Nailing Plug.

The Pittsburgh Channel Pin Company, Pittsburgh, Pa., is offering the device shown in the accompanying illustration for holding nails in a wall joint in concrete work, &c. The plug is made by corrugating a piece of galvanized iron, perforating it in the center, bending over the ends to form a lip through which the nails may enter readily, and then folding the sheet of iron together so that the grooves of the corrugations are alternating one to the other. The grooves extend clear across. The plug and the nail in being driven between the lips forces its way between the alternating grooves, thereby insuring

a powerful grip. If the nail is long enough it extends through the perforations on the inside of the plug. The plug is designed to take the place of a piece of wood which has been generally used for the purpose of fastening furring strips, expanded metal, &c., to brick and other walls. In using wooden blocks or plugs it is necessary first to saw the piece to a given length and then



Lincoln Nailing Plug

shape it in the form of a wedge to allow driving in place, or else cut a piece the size of the brick to fit in place for nailing to. The nailing plug does away with all such labor and will not warp, shrink or rot as a wooden plug would be likely to do, thus weakening the hold. Plugs are put up 500 to a box, which weighs about 45 lb.

Niksah Duplex Copper Snow Guard.

The Niksah Snow Guard Company, Pittstown, N. Y., is putting on the market its Niksah snow guard, made of wire with steel core, with an outside covering of pure copper. The steel core gives the needed strength and stiffness, and the copper coating is sufficiently heavy to insure durability. The guard is especially recommended by the company for localities where smoke and gases might corrode steel guards.

CONTENTS.	
	PAGE.
The American Motor Road Roller. Illustrated	2005
The Latest Bell Steam Hammer. Illustrated	2006
Some Very Large Machined Castings. Illustrated	2007
Large Chain Drives	2007
The Brown Iron Ores of Alabama.—III. Illustrated	2008
Milling Gas Engine Beds. Illustrated	2010
The British Pig Iron Market	2011
Cast Iron Car Wheels Discussed	2011
The Eclipse Power Hack Saw. Illustrated	2012
Allsteel Filing Units, Illustrated	2013
A New Crane Pipe Machine. Illustrated	2014
The Institute of Metals	2014
Alcohol for Power Purposes in France	2015
Method of Obcaining a Circular and Uniform Chill in	0010
Rolls. Illustrated	2016
The Lunkenhelmer Renewo Valve. Illustrated	2017
The Crane Company in the Pittsburgh District The Williams No. 2 Pipe Machine. Illustrated	2018
	2018
The Cape Girardeau Smelting & Mfg. Company A New Method of Quenching Coke	2019
The Southern Steel Company's Reorganization	2019
The Silver Improved 20-In. Band Saw. Illustrated	2019
The American Institute of Chemical Engineers	2020
Iron Making North and South Contrasted	
An Electric Dock Hoist. Illustrated	2021 2021
Editorial:	2021
Steel-Making Pig Iron and the Merchant Furnaces	2022
The Developing of Metal Drawing	2022
Replacing Old Tools with New Ones	2022
The Niles Iron & Steel Company's Improvements	2024
A Book on Rolls and Rollmaking	2024
Uniform Foundry Costs. Illustrated	2024
The Steel Rail Situation.	2028
The Mechanical Engineers' Convention.	2029
News of the Works:	2020
Iron and Steel	2030
General Machinery	2030
Power Plant Equipment	2030
Foundries	2030
Bridges and Buildings	2030
Fires	2030
- Hardware	2030
Miscellaneous	2030
Personal	2031
Obituary	2031

The Iron and Metal Trades:	
A Comparison of Prices	2032
Chicago	2032
Philadelphia	2034
Philadelphia	2035
Pittsburgh	
Cleveland	$\frac{2037}{2038}$
St. Louis	2038
Cincinnati	2039
The Writ of Injunction	2039
New York	2040
Metal Market	2040
Iron and Industrial Stocks	$2040 \\ 2041$
Customs Congestion in the Courts	2041
The Liability of Freight Handlers	2042
The Machinery Trade:	
New York Machinery Market	2043
Chicago Machinery Market	2043
Cleveland Machinery Market	2014
Cincinnati Machinery Market	$2045 \\ 2046$
New England Machinery Market Philadelphia Machinery Market	2047
St Louis Machinery Market	2047
Government Purchases	2047
First Ore Cargo for the Wickwire Furnace	2048
Hardware:	0040
Condition of Trade	$\frac{2049}{2050}$
Notes on Prices	2052
Pittsburgh Screw & Bolt Company	2052
An Eastern Merchant's Alphabetical File. Illustrated	2052
Among the Handways Tunds	2052
Keeping Record of Stock. Illustrated. Price-Lists, Circulars, &c.	2053
Price-Lists, Circulars, &c	2054
Letters from the Trade	$\frac{2054}{2054}$
Australian Notes	2055
New England Iron & Hardware Association. Portrait	2056
Pittsburgh Emery Wheel Company	2056
Requests for Catalogues, &c	2056
Trade Tracers. Illustrated	2057
Fourth of July Window Exhibit	$\frac{2057}{2058}$
A Hardware Dreadnaught Illustrated	2058
A Hardware Dreadnaught. Illustrated The Brown Shade Adjuster. Illustrated	2059
Old Hickory and Honest Abe Handles. Illustrated	2059
Saw Set No 201 Illustrated	2060
Lincoln Nailing Plug. Illustrated. Niksah Duplex Copper Snow Guard. The Wagner Barn Door Latch No. 55. Illustrated The Chicago-Sun Clothes Dryer. Illustrated	2060 2060
The Wagner Barn Door Latch No. 55 Illustrated	2060
The Chicago-Sun Clothes Dryer, Illustrated	2061
The Cesks Firmy Scoon. Hinstrated	2061
Hand Bending Tools. Illustrated	2062
Von Duprin Self-Releasing Fire Exit Latch. Illus	2062
Universal Ball Bearing Castor. Illustrated The Howard Dustless-Dusters	2083
Current Hardware Prices	2064
	2001

The Wagner Barn Door Latch No. 55.

The gravity latch locking device here illustrated and made by the Wagner Mfg. Company, Cedar Falls, Iowa, is designed for use on barn doors and outbuildings. The

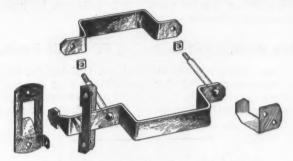


Fig. 1 .- The Wagner Barn Door Latch No. 55.

objects aimed at in its design were to furnish a simple, secure and easily operated latch without a protecting catch piece. This, as will be noted in Fig. 1, is accomplished by the use of a steel plate set flush with the door post, with an inwardly projecting catch piece. The purpose of this arrangement is obvious, since the tendency of projections about the barn door openings to catch harness

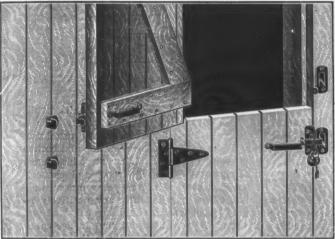


Fig. 2.—Application of Barn Door Latch.

and clothes makes their presence undesirable. A locking plate is furnished with the latch for use if desired, the manner of its application being shown in Fig. 2. Latch plates are also furnished for attachment to the side of the building to hold the door open. The latches are made of steel, japanned, and are packed one dozen in a box, the weight of which is 15 lb.

The Chicago-Sun Clothes Dryer-

A clothes dryer adapted for lawns, roofs, balconies, porches, courts and drying rooms, illustrated herewith.

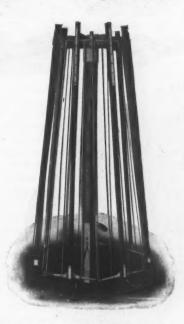


Fig. 1 .- The Chicago-Sun Clothes Dryer.

It is made by the Chicago Dryer Company, 381 to 385 Wabash avenue, Chicago, Ill., in such variety as to meet

many requirements, and is so simple in construction that it can be quickly installed by anybody. The arrangement of parts is such that the dryer can be removed almost instantly from the balcony, the roof, or yard, and stored away when not in use. The wooden parts are made of the best Norway pine, while the castings are of the best refined malleable iron. Fig. 1 shows the dryer in position with socket equipped with supports for attaching to a roof. The post measures 6 ft. in hight, thus bringing the clothes within an easy reach. The distance from the base to the top of the post is 6 ft. 6 in. and from end to end of the extended arms is 13 ft. 4 in. The dryer contains seven arms, each measuring 6 ft. 3 in. in

length, and contains four lines 5 ft. 10 in. long upon which to hang clothes, thus making a total of 164 lineal feet of hanging line. The dryer for the lawn consists of a cast iron socket which is placed in the ground with the center standard or post fitting into this socket. The top of the post is supplied with a pivot and the latter contains a steel wheel in which there are seven steel holders, each holder containing one protruding arm. The arms are interchangeable, and by securing steel holders the



additional Fig. 2.—Chicago-Sun Dryer Lowered.

arms can be used in the laundry or the drying room. The balcony dryer is also useful to suspend from the piazza posts of private dwellings, and is especially useful in boarding houses and homes where laundry work is done every day. When the dryer is not in use the arms may be lowered to a vertical position, as shown in Fig. 2.

The Ceska Firing Scoop.

The firing scoop shown in the accompanying illustration is being put on the market by the Hukill-Hunter Company, Pittsburgh, Pa. It is made of 90 carbon crucible steel which the company refers to as an exceptionally high grade, hard material to put into shovels, insuring long life. The tongues which will be observed in the howl add to the strength of the tool and assist in scattering fuel evenly over the firebox, effecting a saving in labor and an economy in fuel by admitting of carrying a light fire. In locomotive firing the scoop is said to be a great help in getting the coal up to the front end of the firebox, since when bearing the scoop it is well scattered instead of in a long string, and the draft aids materially in carrying it up.



The Ceska Firing Scoop.

Hand Bending Tools.

Two hand bending tools made by Estep & Dolan, Sandwich, Ill., and here illustrated, are designed to meet the miscellaneous requirements of small shops and factories where the character of service required does not justify the use of expensive power machines. The No. 1 ring bender, Fig. 1, is suited to such work as the bending

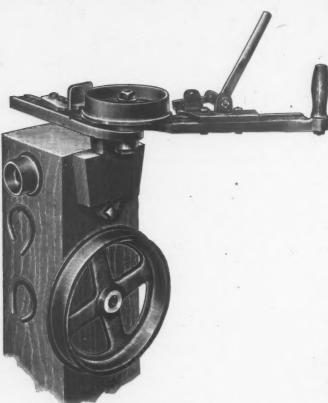


Fig. 1 .- Ring Bender No. 1.

of rings for hub bands, garden cultivator wheels, wheelbarrow tires, chain links, &c., and has a capacity for forming bands up to 20 in. in diameter. It is of very simple construction, being composed of a central wheel form, around which the shapes are bent by means of a pivoted hand lever. Upon the latter is mounted an adjustable clamping device, which locks the piece against the form. Sizes of forms up to 10 in. vary by graduations

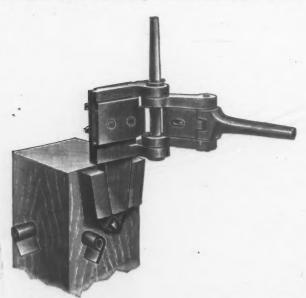


Fig. 2 .- Hinge Bender No. 1.

of ¼ in. and above this size by even inches up to 20 in.; forms from 1¼ in. in hight and up can be supplied. For the bending of U shapes forms are also furnished when required. Fig. 2 represents the No. 1 hinge bender, which is referred to as being the only tool of this charac-

ter on the market. It is adapted to the forming of heavy hinges and flat eyes without offsets, such as are used on barn doors, gates, &c. One pin and bushing are furnished with each machine, but others are supplied on order. It is adjustable only to a limited extent, though special sizes are built for specific work. Both tools can be interchangeably mounted on the same block.

Von Duprin Self-Releasing Fire Exit Latch.

The Vonnegut Hardware Company, Indianapolis, Ind., as distributor, is offering the self-releasing fire exit latches for single and double doors manufactured by the Von Duprin Self-Releasing Fire Exit Latch Company and

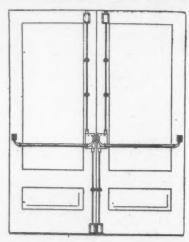


Fig. 1.—Von Duprin Self-Releasing Fire Exit Latch No. 23, for Double Doors.

designed for use in schoolhouses, churches, halls, public buildings, &c. The device on the inside of the door is represented in Fig. 1. It combines in one the usual features of locking devices, the dead lock and top and bottom latches. About waist high a solid bar stretches across the door, standing away from the wood, and connects directly with mechanism of the latch. Any pressure applied to any part of the bar instantly and positively releases the dead lock and latches simultaneously and permits doors to open. It is pointed out that in fire catastrophes the loss of life is due primarily to the fact that the exit doors refuse to operate at the critical moment, when terrified people mass themselves about the exits.

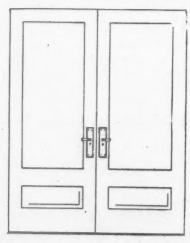


Fig. 2.—The Usual Hardware Trim Applied on Outside of Doors.

With the device illustrated it is explained that when people rush blindly toward the exit doors and the leaders are forced against the bar across the opening the latches operate automatically and the doors swing open, even though the latch bolts are dead locked from outside. In Fig. 2 the lever and escutcheon is shown on the outside of doors. The latch is operated from the outside in the same manner as any ordinary lock and latch device. The device is carried in stock in a number of finishes, for doors up to 3 x 8 ft., and is easily adusted to doors of lesser widths and hights.

Universal Ball Bearing Caster.

The Universal Caster & Foundry Company, 1170 Broadway, New York, has put on the market the Universal oblong ball bearing platform or plate caster, here



Fig. 1.—Universal Ball Bearing Steel Caster.

shown in detail. The parts are made of high grade open hearth basic steel. The rivet fastering the horn to the plate is proportioned to the strength required in each size; greater as the sizes increase, to prevent bending. The balls are of steel 7-32 in. uniform diameter in all



Fig. 2.—Sectional View of Horn and Ball Race.

sizes of casters. One of the new features in this style is the ball retainer, Fig. 2, by means of which the balls are securely kept in the proper position and free to roll

in any direction regardless of obstructive particles incidental to any position so near the floor. Fig. 3 is a sectional view of the new style steel wheel, as now made, having fewer parts and better shape. The casters are made in Nos. 3 to 8 inclusive, with wheels from 1 1-16 in. to 1% in. diameter, the horns of which may be obtained in steel, brass or nickel plated. The wheels can be supplied in iron, steel, lignum vitae, brass, nickel plated, solid

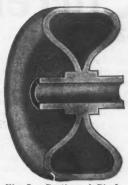


Fig. 3.—Section of Steel Wheel,

brass, leather and soft and hard rubber, according to preference and service required. The plates range from $1\frac{1}{2} \times 1$ 3-16 to 2 9-16 x 2 in.

The Howard Dustless-Dusters.

The Howard Dustless-Duster Company, 164 Federal street, Boston, Mass., is manufacturing dusters of chemically treated cloth, designed to dust, clean and polish all furniture, finish, metal, glass, &c. The material of which the dusters are made is a soft black fabric, calculated to be used on the most delicate surfaces without scratching them. The peculiar feature of the dusters is their dust retaining quality. It is explained that when rubbed over a dust covered surface they absorb the dust, and can be immediately used on a dark colored material like a derby hat without communicating to it the dust already absorbed. The dust can be washed out of the duster with warm water and soap, but the company states that the properties cannot be washed out of the cloth. The article is made in four varieties: Standard dusters, office dusters, floor-or bag broom-dusters and auto dusters.

THE WHEELING CORRUGATING COMPANY, Wheeling, W. Va., is distributing a series of card calendars, which are cleverly designed to advertise the company's leading lines of sheet metal products. They are of convenient size for inclosure in business envelopes and have on one side a full calendar for 1908 and on the other side, 1909. Above the calendars are illustrations with brief printed descriptions referring to the company's products, including Sheets, Ceilings, Shingles, Roofing, Stove Pipe, Galvanized Ware, Dripping Pans, &c.

PAINTS, OILS AND COLORS

Animal, Fish and Vege- table Oils— wgal	Chalk, in bulk
Linseed, State and Western, 42 G44 City, Boiled	Whiting, Commercial # 100 ft Gilders # 100 ft Ex. Gilders # 100 fb
City, Raw	Putty, Commercial
Lard Prime, Winter	In bladders
Summer White	Spirits Turpentine
Tallow, Acidless	In Oil bbls
Bleached Winter40 @ Ex. Bleached Winter42 @	Glue-
Cocoanut, Ceylon	Cabinet
Cod. Domestic, Prime	Extra White
Red. Elaine	Foot Stock, White
Neatsfoot, Prime	German Common Hide German Hide
Mineral Oils-	French
Black, 29 gravity, 25@30 cold 9 gal.	Low Grade
Black, 29 gravity, 25@30 cold \$\mathbb{9}\ \text{gal.} \\ 13 @13\\\\ 29\ \text{gravity}, 15cold test13\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Summer 12½@13 Cylinder, light filtered20½@21	Gum Shellac-
Dark, filtered	Bleached, Commercial Bone Dry
Paraffine, 903-907 sp. gravity14\%@15 903 sp. gravity	Button
883 sp. gravity	Diamond I
	Fine, Orange
Miscellaneous	G. A. L. Kala Button
Barytes: White Foreign 39 ton \$18.50@20.50	D. C Octagon B
White, Foreign \$\pi\$ ton \$18.50@20.50 Amer., floated \$\pi\$ ton \$18.00@20.00	T. N
Off color	V. S. O

lk, in bulk \$\mathcal{y}\$ ton \$3.000 3.40 \\ na Clay, Imported \$\mathcal{y}\$ ton \$1.500\text{28.80} \\ na Clay, Imported \$\mathcal{y}\$ ton \$1.500\text{28.80} \\ na Clay, Imported \$\mathcal{y}\$ ton \$1.500\text{28.80} \\ na Clay Index \$\mathcal{y}\$ 100 \$\mathcal{y}\$ \$420 \text{28.80} \\ na Clay Index \$\mathcal{y}\$ 100 \$\mathcal{y}\$ \$000 \$\mathcal{y}\$ \$000 \$\mathcal{y}\$ \$0000 \$\mathcal{y}\$ \$000 \$\mathcal{y}\$ \$0000 \$\m	Colors in Oil
Spirits Turpentine— p gal.	White Lead, Zinc, &c
Oil bbls	Lead, English whits, in Oil10%(210%) Lead, American White: Lots of 500 B or over, in Oil @ 6% Lots less than 500 B, in Oil @ 7% Lead, White, in Oil, 25 B tin pails Lead, White, in Oil, 12½ ib tin pails Lead, White, in Oil, 1 to 5 B assorted tins @ 7% Lead, American. Terms: On lots of 500 Bs and over 2% for cash if paid in 15 days from date of invoice. Zinc, Dry— American, dry \$\frac{3}{2}\$ B American, dry \$\frac{3}{2}\$ B Red Seal (French process). \$\frac{6}{2}\$ 6%
Gum Shellac— Pro	Green Seal (French process). 74@ 74
ached, Commercial 28 @29 ee Dry 35 @36 ton 30 @40 mond I 47 @48 e, Orange 34 @35 C Garnet 27 @28 A L 18 @19 a Button 19 @20 C 48 @49 agon B 33 @44 N. 29 @32 S O 47 @48	Process C/6@ 676

Blue, Celestial. 4 6 6 Blue, Chinese. 31 633 Blue, Prussian. 29 631 Blue, Ultramarine. 34,615 Brown, Spanish. 4,61 Carmine, No. 40. 33.1063.25 Green, Chrome, ordinary. 34,65 Green, Chrome, pure. 17 625 Lead, Red, bbls., ½ bbls., kegs. 6 64 Litharge, bbls., ½ bbls., kegs. 6 64
Ocher, American P ton \$8.50@16.00 American Golden 2%@ 3% French 1%@ 2 Foreign Golden 3 @ 4 Orange Mineral, English 10 @12 French 12%@13 German 12 @13 American 9 @10
Red, Indian, English. 4%@ 6 American 3 @ 3% Red, Turkey, English. 4 @ 20 Red, Tuscan, English. 5 @ 10 Red, Toscan, English. 7 @ 10 Red, Yestlan, Amer. \$100 \$ \$0.50@1.28
Sienna, Italian, Burnt and Powdered 3 @ 9 Italian, Raw, Powdered 3 @ 7 American, Raw. 114@ 2 American Burnt and Pow'd. 14@ 2
Talc, French. \$\frac{9}{2}\text{ ton \$\\$18.00a25.00} \\ American \times \{0\) fon \$\\$18.00a25.00} \\ Terra Alba, French \{0\} \{0\} 100 \text{ fb} \text{ 500a25.00} \\ English \times \{0\} \{0\} \{0\} \\ English \times \{0\} \{0\} \{0\} \\ American \{0\} \{0\} \{0\} \\ No. 1. \{75\\\00\} \{0\} \\ American \{0\} \{0\} \\ No. 1. \{75\\\00\} \{0\} \\ American \{0\} \{0\} \\ No. 1. \{75\\\00\} \{0\} \\ Momers \{0\}
Vermilion, American Lead 7, 625 Quicksliver, bulk

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in Italics, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 % @ 33 % & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.-For the names and addresses of manufacturers see the advertising columns and also The Iron Age Directory, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a directory of the Iron, Hardware and Machinery trades Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware ats" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Commbian and Domestic	Adjusters, Blind—	Axes—
Taplin	Columbian and Domestic331/2% North's	Single Bit, base weights: Per doz. First Quality\$4.75@5.00 Second Quality\$4.25@4.50
Ammunition	Window Ston-	Double Bit, base weights: First Quality\$7.00@7.50 Second Quality\$6.50@6.75
### Anti—Rattlers—		Axle Grease—
Pernald Mg. Co. Burton Anti- Hattlers, \$\$\text{\$\text{\$\text{\$000000000000000000000000000000000000		
Ratilers		Concord, Loose Collar 41/4@41/2¢
Swediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, \$\frac{1}{2}\$	Fernald Mfg. Co. Burton Anti-	Concord, Solid Collar 1/265 ¢
Swediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, \$\frac{1}{2}\$		No. 1½ Com., New Style.1¼@1¾¢ No. 2 Solid Collar
Swediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, Superior, \$\frac{1}{2}\$ Bwediak Soild Steel Siaco, \$\frac{1}{2}\$	Anvils-American-	Nos. 13 to 14
Swedish Solid Steel Sisco, Superior, Delivide Peter Wright & Sons, \$\tilde{\psi}\$ h, \$\tilde{\psi}\$ size tool by h, \$\tilde{\psi}\$ size tool by h, \$\tilde{\psi}\$ size tool by h, \$\tilde{\psi}\$ size tool by h, \$\tilde{\psi}\$ size tool by h, \$\tilde{\psi}\$ size to size to h, \$\tilde{\psi}\$ (c), \$\tilde{\psi}\$ size to h, \$\tilde{\psi}\$ (c), \$\	Hay-Budden, Wrought	Nos. 15 to 1870&10@70&10&5% Nos. 19 to 2270&10@70&10&5%
## Brite* 380 to 80 h, 11% and Drill—Millers Falls Co., \$18.00	Swadish Solid Steel Sisco Superior.	Common and Concord not
Millers Falls Co., \$18.00	## 10	Common and Concord, turned, lb., 6@7¢
Apple	Millers Falls Co. \$18.0015&10%	Half Patent
Appros, Blacksmiths!— Livingston Nail Co		Bait- Fishing-
Com. Double Spur 75&10@80% Jennings Patn. Bright.65&10@70% Black Lip or Blued 65@65&5 Boring Mach. Augers		
Com. Double Spur		B Bait
C. E. Jennings & Co. No. 10 ext. lip. B. Jennings' list. No. 2 flar list. Shell's Auger Bits. Soluel's Auger Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's King Auger Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark bits. C. E. Jennings & Co. Lark's Pattern. Soluel's Cark bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark's Pattern. Soluel's Cark's Pattern. Soluel's Cark bits. Soluel's Cark bit	Augers and Bits-	Caldwell new list50&10%
C. E. Jennings & Co. No. 10 ext. lip. B. Jennings' list. No. 2 flar list. Shell's Auger Bits. Soluel's Auger Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's King Auger Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark bits. C. E. Jennings & Co. Lark's Pattern. Soluel's Cark bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark's Pattern. Soluel's Cark's Pattern. Soluel's Cark bits. Soluel's Cark bit	Jennings' Patn., Bright.65&10@70%	Pullman
C. E. Jennings & Co. No. 10 ext. lip. B. Jennings' list. No. 2 flar list. Shell's Auger Bits. Soluel's Auger Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's King Auger Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark bits. C. E. Jennings & Co. Lark's Pattern. Soluel's Cark bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark's Pattern. Soluel's Cark's Pattern. Soluel's Cark bits. Soluel's Cark bit	Black Lip or Blued65@65&5% Boring Mach. Augers70%	Light Spring Balances . 60 @ 60&5%
C. E. Jennings & Co. No. 10 ext. lip. B. Jennings' list. No. 2 flar list. Shell's Auger Bits. Soluel's Auger Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's King Auger Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark bits. C. E. Jennings & Co. Lark's Pattern. Soluel's Cark bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark's Pattern. Soluel's Cark's Pattern. Soluel's Cark bits. Soluel's Cark bit	Car Bits, 12-in. twist40&10%.	
C. E. Jennings & Co. No. 10 ext. lip. B. Jennings' list. No. 2 flar list. Shell's Auger Bits. Soluel's Auger Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's King Auger Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Soluel's Aller Bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark bits. C. E. Jennings & Co. Lark's Pattern. Soluel's Cark bits. Bit Stock Drills— See Drills, Ticist. Expansive Bits— Clark's Pattern. Soluel's Cark's Pattern. Soluel's Cark's Pattern. Soluel's Cark bits. Soluel's Cark bit	Ft. Washington Auger Co., Con-	Straight Balances40@40&10%
See Drills, Twist.	Forstner Pat. Auger Bits25%	Large Dial
See Drills, Twist.	No. 10 ext, lip. R, Jennings' list.	
See Drills, Twist.	No. 30, R. Jennings' list	Steel Crowbars, 10 to 40 lb
See Drills, Twist.	Pugh's Black	No. 10 Ideal, Nickel Plate. 9 gro, \$8.50
See Drills, Twist.	Pugh's Jennings' Pattern35% Snell's Auger Bits60%	Beam, Scale-
See Drills, Twist.	Snell's Bell Hangers' Bits60% Snell's Car Bits, 12-in, twist60%	Scale Beams40%
See Drills, Twist.	Wright's Jennings' Bits50%	Chatillen's No. 2
Clark's Pattern, No. 1, \$\psi doz., \$\frac{28}{50.61}\$, \$No. 2, \$\frac{18}{51.51}\$, \$No. 1, \$\frac{10}{51.52}\$, \$No. 2, \$\frac{18}{51.51}\$, \$\frac		Beaters, Carpet-
Beaters Egg	Evnanelus Pita	No. 12 Wire Coppered & doz. \$0.80;
Beaters Egg	Clark's Pattern, No. 1, \$\to doz., \$26; No. 2, \$18.	No. 11 Wire Coppered @ doz. \$1.15;
Size, \$1.50; No. 5, Extra Family Size, \$24.00; No. 4, Hotel Size, \$3.00 and Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75	Ford's, Clark's Pattern	No. 10 Wire Tinned Ø doz. \$1.50
Size, \$1.50; No. 5, Extra Family Size, \$24.00; No. 4, Hotel Size, \$3.00 and Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75	Lavigne Pat., small size, \$18.00; large size. \$26.00, 60&10%	Dover Stamping & Mfg. Co.:
German Pattern, Nos. 1 to 10. \$\frac{\$4.75}{\$1.15}\$ to 13. \$\frac{\$5.75}{\$1.55}\$ Hollow Augers— Bonney Pat., per dos. \$\frac{\$5.90}{\$6.90}\$ Ames	Swan's	Tumbler Size, \$7.50; No. 2, Fam-
German Pattern, Nos. 1 to 10. \$\frac{\$4.75}{\$1.15}\$ to 13. \$\frac{\$5.75}{\$1.55}\$ Hollow Augers— Bonney Pat., per dos. \$\frac{\$5.90}{\$6.90}\$ Ames	Per gro.	ily Size, \$7.50; No. 3, Extra Family Size, \$24.00; No. 4, Hotel Size,
Hollow Augers	German Pattern, Nos. 1 to 10.	
Ship Augers and Bits— Ship Augers		No. A, Jap'd, \$1.15; No. B, Jap'd,
Ship Augers and Bits— Ship Augers	Bonney Pat., per dog \$5.50@6.00	Lyon, Jap'd, per doz., No. 2,
Mechanics' Tool.	Universal20%	Taplin Mfg. Co.:
Mechanics' Tool.	Ship Augers and Bits-	\$6,00; No. 75, \$6.5 : No. 100, \$7.00;
Mechanics' Tool.	Ford's	Hotel, \$15.00; No. 152, Hotel
Mechanics' Tool.	L'Hommedieu's6%	\$8.50; No. 202, Tumbler Tin'd,
Mechanics' Tool.		doz., \$25,00.
Awis		Dellows
Hand Awts: Handed		Split Leather 60&10@65%
Unhandled, Patentgro.68@70e Peg Awls: Unhandled, Patentgro.31@34e Unhalded, Solderedgro.65@70e Scratch Awls: Handled, Somgro.\$3.50@1.00 Handled, Socket.gro.\$11.50@12.00 Awl and Tool Sets—See	Brad Awls:	Grain Leather 5000504107
## Molders - ## Mol	Unhdled, Shidered, gro. \$2.75@3.00	
Unhdled, Shidered. gro. 65@70e Scratch Awis: Handled, Comgro. \$3.50@1.00 Handled, Socket. gro. \$11.50@12.00 Awi and Tool Sets—See	Unnanaica, Patentgro.66@70e	Molders-
Handled, Comgro. \$3.50@1.00 Handled, Socket.gro.\$11.50@12.00 Awl and Tool Sets—See	Unhandled, Patent. gro. 31@34¢	Doz \$7.50 9.00 12.00 15.00
Awl and Tool Sets-See Door-	Scratch Awls:	Bells— Cow-
Awl and Tool Sets-See Door-	Handled, Comgro.\$3.50@4.00 Handled, Socket.gro.\$11.50@19.00	Jersey
	Awl and Tool Sets-See	Door-
		Home, R. & E. Mfg. Co.'s55&10%

Hand-	Plow and Stov
Polished, Brass 60@60&10% White Metal 60@60&10% Nickel Plated 50&10% Stries 50&10% Cone's Globe Hand Bel.s 33%@35%	Plow
Nickel Plated50d.60&10%	Stove
Striss	Common Iron
Miscellaneous-	Norway Iron
Farm Bellslb., 24@24& Church and School60@60&10%	Norway Phila., list Oct.
D 141	Bay State, list Dec. 28,
Belting Leather -	Common Iron
Leather Leather 70&10@70&10&5% Light 75&10°, Cut Leather Lacing 60@60&10%	Eagle Phila., list Oct. 16, Eclipse, list Dec. 28. '99.
Cut Leather Lacing 60@60&10% Leather Lacing Sides, per sq. ft.	Russell, Burdsall & Ward Nut Co.:
20¢	Russell, Burdsall & Ward Nut Co.: Empire, list Dec. 28, '99 Norway Phila., list Oct.
Rubber—	Eagle
70&10@75%	Tiger Brand, list Dec. 29 Phila. Eagle, list Oct. 16
Competition (Low Grade), 70&10@75% Standard	Eagle Co.: Shelton Co.: Tiger Brand, list Dec. 22 Phila., Eagle, list Oct. 16, Upson Nut Co.: Tire Bolts.
Bench Stops—	
See Stops, Bench	Borers, Bung—
Benders and Upsetters,	Inch 11/4 11/2
Tire— Green River Tire Benders and Up-	Borers Bung, Ring, with Inch
setters20%	Per doz
Bicycle Goods-	2, \$1.75; No. 3, \$2.50 each
John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes	Boxes, Mitre-
Bits—	C. E. Jennings & Co Langdon, New Langdon a don Improved, 20&10%; Acme
Auger, Gimlet, Bit Stock Drills,	don Improved, 20&10%;
&c.—See Augers and Bits. Blocks Tackle—	Perfection Seavey
DIOCKS Tackle— Common Wooden	Braces-
Boston Wood Snatch, 50%; Eclipse	Comman Ball, America
Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox	Fray's Genuine Spofford's
Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope	C. E. Jennings & Co
Snatch, 50%. Lane's Patent Automatic Lock and	Mayhew's Quick Action Ha
	Comman Batt, America Barber's
Boards, Stove-	Brackets-
Paper and Wood Lined 55%	Tilyonaha Class Mr 440 C
mbossed	Wrought Steel. 75&10@
Boards, Wash—	Bradley Metal Ciasp 30&10 Griffin's Pressed Steel
Boards, Stove— Paper and Wood Lined	Bradley Metal Clasp 80 & 10 Griffin's Pressed Steel Griffin's Folding Brackets Taplin Victor Bandy Ea
see washoowas.	Bradley Metal Clasp80&10 Griffin's Pressed Steel
Bobs, Plumb— Keuffel & Esser Co334%	Bradley Metal Ciasp. 30&16 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo
Bobs, Plumb— Keuffel & Esser Co334%	Bradley Metal Clasp80&10 Griffin's Pressed Steel
Bobs, Plumb— Keuffel & Esser Co334%	Bradley Metal Clasp. 80&16 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire 6 Broilers—
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvani
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Freesed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire 6 Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'fr's list, price per jourt 10 18
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Freesed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire 6 Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'fr's list, price per jourt 10 18
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire Go Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvanl M'fr's list, price per guart. 10 12 Water, Reg. 26.85 29.35 Water, Hvy. 45.35 48.06 Fire, Rd. Btm. 32.00 34.65 Well 37.35 41.35
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvani M'fr's list, price per guari 10 12 Water, Reg. 26.85 29.56 Water, Hvy. 45.35 48.00 Fire, Rd. Btm 32.00 34.65 Well
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvani M'fr's list, price per guart. 10 12 Water, Rep. 28.85 29.56 Water, Hvy. 45.35 48.06 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Clasp. 80&11 Griffin's Freesed Steel. Griffin's Freesed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'fr's list, price per y Quart. 10 12 Water, Reg. 26.85 29.56 Water, Hvy. 45.35 48.06 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvanl M'fr's list, price per , Quart. 10 12 Water, Rep. 28.85 29.56 Water, Hvy. 45.35 48.05 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvanl M'fr's list, price per , Quart. 10 12 Water, Rep. 28.85 29.56 Water, Hvy. 45.35 48.05 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&16 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvanl M'fr's list, price per , Quart. 10 12 Water, Rep. 28.85 29.56 Water, Hvy. 45.35 48.05 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Wire Goo See Wire and Wire Goo See Wire and Wire Goo Wire Goods Co. Buckets, Galvani M'fr's list, price per Quart 10 12 Water, Reg. 26.85 29.56 Water, Hvy. 45.35 48.00 Fire, Rd. Btm 32.00 34.65 Well 37.35 41.35 Bull Rings—See Ri Butts—Brawrought, High List, Oct Cast Brass, Tiebout's Cast Iron—Fast Joint, Broad Fast Joint, Narrow Loose Joint Mayer's Hinges
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Wire Goods Co Buckets, Galvanl M'fr's list, price per Quart. 10 12 Water, Reg. 28.85 29.50 Water, Hvy. 45.35 48.00 Fire, Rd. Btm. 32.00 34.65 Well S7.35 41.35 Bull Rings—See Ri Butts— Brawought, High List, Oct Cast Brass, Tiebout's Cast Iron— Fast Joint, Narrow Loose Joint Mayer's Hinges Parliament Butts
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 30&16 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'fr's list, price per g Quart. 10 12 Water, Reg. 28.85 29.56 Water, Reys. 45.35 48.00 Fire, Rd. Bitm. 32.00 34.65 Well
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 30&11 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Wire Goods Co Buckets, Galvanl M'fr's list, price per y Quart. 10 12 Water, Reg. 26.35 29.50 Water, Reg. 26.35 29.50 Water, Hvy. 45.35 48.00 Fire, Rd. Btm 32.00 34.65 Well S7.35 41.35 Bull Rings—See Ri Butts— Brac Wrought, High List, Oct Cast Brass, Tebout's Cast Iron— Fast Joint, Narrow Loose Joint Mayer's Hinges Parliment Butts. Wrought Stee Bright. Light Narrow. Light
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'pr's list, price per guart. 10 12 Water, Reg. 26.85 29.56 Water, Hvy 45.35 48.00 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'pr's list, price per guart. 10 12 Water, Reg. 26.85 29.56 Water, Hvy 45.35 48.00 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mig. Co Kilbourne Mig. Co Wire Goods Co Buckets, Galvani M'pr's list, price per Quart. 10 12 Water, Reg. 26.85 29.56 Water, Hvy. 45.35 48.00 Fire, Rd. Btm. 32.00 34.65 Well
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Ciasp. 30&16 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers Kilbourne Mfg. Co Wire Goods Co Wire Goods Co Buckets, Galvan! M'fr's list, price per year 10 12 Water, Reg. 28.85 29.56 Water, Hvy. 45.35 48.00 Fire, Rd. Btm. 32.00 34.65 Well S7.35 41.35 Bull Rings—See Ri Butts— Brack Wrought, High List, Oct Cast Brass, Tiebout's Cast Iron— Fast Joint, Narrow Loose Joint, Narrow Loose Pin Mayer's Hinges. Parliament Butts Wrought Steel Bright Light Narrow, Light versible Reversible and Broad Reversible and Broad Loose Joint, Narrow, Li Inside Blind. &c Back Flaps, Table Chesil
Bobs, Plumb— Keuffel & Esser Co	Bradley Metal Clasp. 80&11 Griffin's Pressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire Go See Wire and Wire Go See Wire and Wire Go Buckets, Galvani M'fr's list, price per Quart. 10 12 Water, Rep. 26.85 29.56 Water, Hvy. 45.35 48.05 Fire, Rd. Btm. 32.00 34.65 Well 37.35 44.35 Bull Rings—See Ri Butts— Brawought, High List, Oct Cast Iron— Fast Joint, Broad. Fast Joint, Narrow. Loose Joint. Loose Joint. Loose Joint. Loose Joint. Light Narrow, Light versible and Broad. Light Narrow, Li Brake Blind, &c. Back Flaps, Table Chest Japanned. Light Narrow, Loose Pi Light Narrow, Ball Tip Light Narrow, Ball Tip Light Narrow, Ball Tip
Bobs, Plumb— Keufiel & Esser Co	Bradley Metal Ciasp. 30&11 Griffin's Fressed Steel. Griffin's Fressed Steel. Griffin's Folding Brackets. Taplin Victor Handy Eg Bracket Bright Wire Goo See Wire and Wire G Broilers— Kilbourne Mfg. Co Wire Goods Co Buckets, Galvani M'fr's list, price per g Quart. 10 12 Water, Reg. 26,35 29.50 Water, Reg. 26,35 29.50 Water, Hvy. 45,35 48.00 Fire, Rd. Btm 32.00 34.65 Well 37.35 41.35 Bull Rings—See Ri Butts— Brac Wrought, High List, Oct Cast Brass, Tiebout's. Loose Joint, Narrow. Loose Joint, Narrow. Loose Pin Mayer's Hinges. Parliament Butts. Wrought Stee Bright Light Narrow, Light versible Reversible and Broad. Light Narrow, Loose Pin. Japanned. Light Narrow, Loose Pin. Light Narrow, Loose Pin. Light Narrow, Loose Pin. Loose Joint, Taple Chest Japanned. Light Narrow, Loose Pin.

Plow and Stove-	
Plow	5%
Common Iron80@8 hd Norway Iron80@80d American Screw Co.;	5%
Norway Phila., list Oct. 16, '84 Eagle Phila., list Oct. 16, '84 82 Bay State, list Dec. 28, '99 Franklin Moore Co.:	80 % 142 % 80 %
Common Iron	80 % 80 % 80 %
Empire, list Dec. 28, '99 Norway Phila., list Oct. '84 Eagle	80 % 80 % 142 %
Eclipse, list Dec. 28, '99 Russell, Burdsall & Ward Bolt Nut Co.: Empire, list Dec. 28, '99 Norway Phila, list Oct. '84 Eagle 8: Shelton Co.: Tiger Brand, list Dec. 23, '99 Phila, Eagle, list Oct. 16, 1884. 82 Upson Nut Co.: Tiger Bolts. 72	80 % 142 %
Borers, Bung-	
Borers Bung, Ring, with Hand Inch	lle: 2 8.00 2½ 1.50
	10
Boxes, Mitre— C. E. Jennings & Co	25% g- on 10% 40%
Perfection Seavey	45%
Draces—	
Comman Ball, American. \$ Barber's	1.50 10 % 60 % 50 % 60 % 60 % 10 %
Brackets-	
Wrought Steel.75&10@75&10&1 Bradley Metal Clasp30&10@30&10&1 Griffin's Pressed Steel75@75& Griffin's Folding Brackets70& Taplin Victor Handy Egg Beat Bracket	0% 10% 10% er 11.50
Bright Wire Goods-	
See Wire and Wire Goods.	
Broilers-	
Kilbourne Mfg. Co	20 % 75 %
M'fr's list, price per gross. Quart. 10 12 14	10
Water, Hvy 45.35 48.00 52.00 Fire, Rd. Btm. 32.00 34.65 38.65 Well 37.35 41.35 45.35	10474c65d
Bull Rings—See Rings, B Butts— Brass—	
Wrought, High List, Oct. 26,'06.5 Cast Brass, Tiebout's	5% 40%
Cast Iron-	0.0/
Fast Joint, Broad	5%
Bright.	
Light Narrow, Light Re- versible	
versible	-0
Inside Blind. &c70% Back Flaps, Table Chest. 65%	. 10
Japanned. Light Narrow, Loose Pin,	tra

Plow and Stove-

Cages, Bird-

Cages, Bird-	American Tool Che
Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300,	American Tool Che Boys' Chests, with Youths' Chests, w Gentlemen's Chest Farmers', Carpent with Tools Machinists' and Chests, Empty Tool Cabinets C. E. Jennings & Tool Chests
900	Farmers', Carpent
	Machinists' and Chests, Empty
Calipers—See Compasses. Calks, Toe and Heel—	Tool Cabinets C. E. Jennings &
Blunt, 1 prong, per lb 4@41/2#	Tool Chests
Blunt, 1 prong, per lb 4@4½\$ Sharp, 1 prong, per lb 4½@5¢ Burke's, Blunt, 4@4½¢; Sharp, 4½@5¢ Lautier, Blunt, 4@4½¢; Sharp, 4½@5¢ Perkins', Blunt, \$\psi\$ b, 3.65¢; Sharp, 4.15¢	Chisels—
Lautier, Blunt, 4@4% ¢; Sharp, 4%@4% ¢ Perkins', Blunt, \$\text{B}\$ b, 3.66¢; Sharp,	SocketFraming Standard List
Can Openers-	Buck Bros C. E. Jennings &
See Openers, Can.	Socket Firmer No. Socket Framing N
Caps, Percussion-	Buck Bros. C. E. Jennings & Socket Firmer No. Socket Framing N Swan's L. & I. J. White &
Eley's E. B	Tanged Firmers
F. L per M. 40@42¢	Buck Bros
Musket per M 62@63¢	L. & I. J. White Col
Primers-	Cold Chisels, goo
Berdan Primers, \$2 per M 2065% Primer Shells and Bullets 15&10% All other primers per M. \$1.52@1.60	Cold Chisels, fai Cold Chisels, ord
Carpet Stretchers—	
See Stretchers, Carpet.	Almond Drill Chuc
Cartridges—	Almond Drill Chuc Almond Turret Six- Beach Pat, each \$8
Blank Cartridges: 32 C. F., \$5.50	Beach Pat, each \$8 Empire Blacksmiths' Jacobs' Drill Chuck Pratt's Positive Di Skinner Patent Chi Independent Lath Universal, Reversi Combination, Rev Drill Chucks 15%; 2%; Fositive L Planer Chucks. Face Plate Jaws. Standard Tool Co. Improved Drill Cluion Mfg. Co. Combination, Nos 7, 8 and 17, 40% Scroll Combination 84
38 C. F., \$7.001065%	Jacobs' Drill Chuck Pratt's Positive Dr
32 cal. Rim, \$2.75 10&5%	Skinner Patent Chi Independent Lath
B. B. Caps, Con. Batt, Swyd. \$199 B. B. Caps, Round Ball \$1.49	Combination, Rev
Target and Sporting Rifle, 1565%	Standard, 45%;
Primed Shells and Bullets. 15&10% Rim Fire, Sporting50%	Planer Chucks
Rim Fire, Military15&5%	Standard Tool Co.:
Casters-	Union Mfg. Co.: Combination Nos
Bed	7, 8 and 17, 40% Scroll Combination
Philadelphia70&10@70&10&10% Acme, Ball Bearing35%	84 Geared Scroll, Nos Independent Iron, Independent Steel Union Drill, Nos. 102, 103, 104. Union Czar Drill, Universal, 11, 22, Universal, 10, 42. Iron Face Plate. 48 and 50. Steel Face Plate.
Gem (Roller Bearing)70&10&10&5% Steel Gem	Independent Iron, Independent Steel
Yale (Double Wheel) low list40&10%	Union Drill, Nos. 102, 103, 104
Cattle Leaders—	Union Czar Drill Universal, 11, 12,
See Leaders, Cattle. Chain, Proof Coil—	Iron Face Plate
American Coil, Straight Link: 3-16 34 5-16 36 7-16 14 58 83.15 5.55 4.60 3.95 3.75 3.65 8.55 34.78-1 11/4 to 11/4 inch.	Steel Face Plate
3-16 14 5-16 38 7-16 19 78 \$8.15 5.55 4.60 3.95 3.75 3.65 3.55	Westcott Patent C. Lathe Chucks Little Giant Auxi Little Giant Doul Little Giant Doul Little Giant Dill. Scroll Combinatio Whitaker Mfg. Co. National Drill
34-76-1 11/8 to 11/4 inch.	Little Giant Auxi
	Little Giant Drill Oneida Drill
German Pattern Coil:	Scroll Combination Whitaker Mfg. Co.
German Cott	National Drill
Halter-	Clamps—
Halter Chains60&5@60&10%	Adjustable Hammer Carriage Makers', Co.
Covert Mfg. Co.:	Besly, Parallel Myers' Hay Rack
Halter	Co. Besly, Parallel Myers' Hay Rack Lineman's Swedish Wood Workers' Hs
See Halters and Ties.	baw Clamps, see V
Trace, Wagon, &c Traces, Western Standard: 100 pr.	Cleaners, D Iwan's Champion, A
174028. Western Standard. 200 pr. 61—6-3, Straight, with ring \$28.00 61—6-2, Straight, with ring \$29.00 61—8-2, Straight, with ring \$32.00 61—10-2, Str'ght, with ring \$37.00	Iwan's Champion, A Iwan's Champion, S Sidew
617—8-2, Straight, with ring \$32.00	Star Socket, All St
NOTE.—Add 2c per pair for Hooks	Star Socket, All St Star Shank, All St W. & C. Shank, A T'/2 in., \$3.00; 8 in
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of	Cleavers, B
Straight Link. Eastern Standard Traces, Wag-	Foster Bros Fayette R. Plumb L. & I. J. White
on Chain, &c60&10@60&10&5% Miscellaneous—	
	Clippers, She
Jack Chain, list July 10, '93; Iron	
Gal. Pump Chainlb., 44265%	Chicago Flexible S) 1902 Chicago Hors 20th Century Hors Lightning Belt Hor Chicago Belt Hor Stewart's Enclusive
Bridgeport Chain Co.: Triumph Halter and Coil.35&21/2@40%	Chicago Belt Hor Stewart's Encl
Brown Halter and Coil45@50&5%	Stewart's Patent
Breast, Halter, Heel, Rein, Stal-	ing Machine, ea
American Halter Dog and Kennel	ing Machine, No
Chains	Regular Styles, 1
Wire Goods Co :	
Chiversan Don John Cham	Cloth and I —See Wire,
One in and Ribbon, Sash-	
Oneida Community: Steel Chain60% Pullman:	Hardware list:
Bronze Chain 60% Steel Chain	Hardware list: Plain Bibbs, G Racking, Lid
Coppered	Compression B
ft. \$2.00@\$5.00 Sash Ribbon Attachments, per set8¢	Coffee Mill
Chalk- (From Johbers)	See Mills, C
Carpenters' Blue gro., 50¢ Carpenters' Red gro., 45¢ Carpenters' White gro., 40¢	Nickel Chain, Wal
	Son's list Leather, Walter B. list
Bardsley's	Compasses
Bardsley's	Ordinary Goods.

THE IR	ON AGE
Chests, Tool— American Tool Chest Co.: Boys' Chests, with Tools	Conductor Pipe,— L. C. L. to Dealers: Gal. Steel. Charcoa Northeastern. 706.10% 50d.1067½ Eastern. 75% 50d.1067½ Pittsburgh .75d.10d.5% 60% Northwestern. 75d.10% 60% Western .70d.12½% 50d.12½ Southern 70% 50d.12½ Southern 70% 50d.12½ Southwestern. 70% 50d.12½ Southwestern. 70% 50d.12½ Southwestern. 70% 50d.12½ Southwestern. 70% 50d.12½ Southwestern. 70% 50d.12½ Colors Water— L. & G. Mig. Co.: Gal 2 3 4 6 8 Galvanized.en. \$1.55 \$2.00 \$2.25 \$2.90 \$3.
Tanged Firmers	Galvanized, Lined, side handles, Gal. 2 3 4 6 5 Each \$1,95 \$2.15 \$2.40 \$3.50 \$4 White Enameled 11 Agate Lined 15 Coppers' Tools—See Tools, Coopers'.
Cold Chisels, good quality.13@15¢ Cold Chisels, fair quality.11@12¢ Cold Chisels, ordinary 9@10¢ Chucks— Almond Drill Chucks 35% Almond Turret Six-Tool Chuck 40% Beach Pat, each 8,300 35&5 Empire 25% Blacksmiths' 25% Jacobs' Drill Chucks 35% Pratt's Positive Drive 25% Skinner Patent Chucks 35% Universal, Reversible Jaws 35% Universal, Reversible Jaws 35%	Coppers, Soldering Soldering Coppers, 3 lb. to pair and heavier, 20¢; lighter than 3 lb. to pair
Empire Blacksmiths	Cable Laid Russia
Union Czar Drill Universal, II. 12. 16, 17, 13, 14, 15. 49 Universal No. 42. 35 Iron Face Plate Jaws, Nos. 28, 30, 48 and 50, 48 and 50, 50 Steel Face Plate Jaws, Nos. 70 and 72 Westcott Patent Chucks: Lathe Chucks. 50 Little Giant Auxiliary Drill 50 Little Giant Duble Grip Drill 50 Little Giant Duble Grip Drill 50 Little Giant Drill, Improved. 50 Coneida Drill 50 Seroll Combination Lathe 50 Whitaker Mfg. Co.: National Drill. 225	Pullman; Wire Sash Cord
Clamps	Turner & Stanton Co. Wire Picture
Adjustable Hammers	Cradles— Grain
Sidewalk— Star Socket, All Steel. P doz. \$4.05 net Star Shank. All Steel. P doz. \$3.24 net W. & C. Shank. All Steel. P doz., 7½ in., \$3.00; \$ in., \$3.25. Cleavers, Butchers'—	The grade. Zelnicker's Lumber: White and Purple, Indelible
Foster Bros	Suremark, Black, \$2.25; Blue, Rec and Yellow. \$2 Crooks, Shepperds'— Fort Madison, per doz., Heavy, \$5.50 Light
Chicago Flexible Shaft Co.: 1902 Chicago Horse, each., \$10.75 20th Century Horse, each., \$5.00 Lightning Belt Horse, each.\$15.00 Chicago Belt Horse, each.\$22.00 Stewart's Enclosed Gear Horse each	Cultivators— Victor Garden
Clips, Axle— Regular Styles, list July 1, '05,	H. H. Mayhew Co. 44 Red Devil. 66 B. Mfg. Co. 44 Woodward 56
80&80&10% Cloth and Netting, wire	Woodward
—See Wire, &c.	American
Cocks, Brass— Hardware list: Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, de	Each \$5 \$7 \$10 \$12 \$25 \$50 \$ Enterprise: Nos 5 10 12 22 32 Each \$2 \$3 \$2.75 \$4.50 \$6 25@25&74 No. 202, \$1.50
Congression Bibbs70% Coffee Mills— See Mills, Coffee.	Meat and Food
Collars, Dog— Nickel Chain, Walter B. Stevens & Son's list	Ideal
10 mm 10 mm 10 %	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

	2005
1	Slaw and Kraut-
harcoal.	Henry Disston & Sons: Slaw and Kraut Cutters
610.67½% 610.67½%	J. M. Mast Mfg. Co.:
60%	Slaw Cutters, 1 Knife 9 doz. \$3.00 Combined Slaw Cutter and Corn
	Tobacco-
60 % 50 & 12 1/2 %	All Iron, Chean doz. \$1.25@1.50
50&121/5% 50&121/5%	National, # doz., No. 1, \$21; No. 2,
5065%	_
ays, Fue-	Diggers, Post Hole, &c-
18.	Disston's: Rapid, \$\psi\$ doz., \$24.00
	Samson, \$\Phi\$ doz., \$34.00
\$2.90 \$3,90 lles,	Vaughan Pattern Post Hole Augers,
6 8 \$3.30 \$4,15	Perfection Post Hole Diggers, \$7.90 doz. \$8.75 Split Handle Post Hole Diggers, Hercules Pattern, \$\preceq\$ doz. \$3.75 Hercules Pattern, \$\preceq\$ doz. \$3.75 Hercules Pattern, \$\preceq\$ doz. \$3.90 Monder's, \$\preceq\$ doz. Universal, \$15.00:
10%	Spit Handle Post Hole Diggers,
	Kohler's, & doz., Universal, \$15.00;
g—	\$10.00; Invincible, \$9.00; Rival,
to pair	Hercules Pattern, 1 doz., \$1.00 Kohler's, 4 doz., Universal, \$15.00; Little Giant, \$12.00; Hercules, \$10.00; Invincible, \$9.00; Rival, \$8.50; Pioneer., \$7.50 Never-Break Post Hole Diggers, 3 doz., \$24.00
ighter 22¢	Dividers—See Compasses.
73. 054	Drawing Knives-
No. 6,	See Knives, Drawing.
0z. or	Dressers Emery Wheel
ound.	Sterling Emery Wheel Dressers35% Sterling Wheel Dresser Cutters35%
0. 18.37¢ ; B, 22¢ 11@11½¢	Drills and Drill Stocks-
d. 18@20¢	Blacksmith's Common Drilling Machines \$1,50@1.75
lb20¢	Breast, Millers Falls
lb 21¢ lb 21¢ b . 13@14¢	Goodell Automatic Drills.50&10@60&10% Millers Falls Automatic Drills.33%&10%
1b 17¢ 8, \$0 b,	Ratchet, Curtis & Curtis
1b17¢ 8, 30 lb. to 12, 26¢ to 12,	Ratchet, Weston's
Nos. 7	Ratchet, No. 012. 40%
100/	Blacksmith's Common Drilling Machines \$1.56(\text{\text{\text{\$M\$}}}\) St. 50(\text{\text{\$M\$}}\) St. 50(\text{\text{\$M\$}}
r 100, \$2,00	Whitney's Hand Drill, No. 1, \$10.00; Adjustable, No. 10, \$12.0033\%
on,	Twist Drills-
¢@ cot- .50¢ \\	Bit Stock70@70&5% Taper and Straight Shank,
1227¢	Drivers, Screw
	Screw D'ver Bits, per doz. 45@50¢
te, 40¢; te, 35¢; n57½¢	Screw D'ver Bits, per doz. \$5@50¢ Balsey's Screw Holder and Driver, \$0 doz., 2½-in., \$6; 4-in., \$7.50; 6-in., \$9
obon.	Buck Blos, Sciew Driver Bits
90@-%	Champion 59% Disston's 79% Fray's Hol. H'dle Sets. No. 3, \$1259% Ford's Brace Screw Drivers 498.10% Gay's Double Action Ratchet 35% Goodell's Auto 65@65&10% Mayhew's Black Handle 4404
re Cord, st. 85&10% Picture	Ford's Brace Screw Drivers40&10% Gay's Double Action Ratchet35%
Picture 90%	Goodell's Auto
5:%	Mayhew's Monarch
	Goodell's Auto
ases, 100 :	Swan's: 30&10%
	Swan's: Nos. 7565 to 7567, 5%; No. 7540, 40&10%
ow and	_
15-16 in.	Eave Trough, Galvanized—
; Indel- \$10.00 Vorkers', ; 5 in. x	Territory Gal. Steel. Iron.
4 - 2.16	Northeastern .75&10&5 % 60&20 % Eastern 80&24 % 60&20 % 65&10 % 65&10 % 65&10 % 65&10 % 60&10&5 % 60&1
\$3.00 ue, Red	Pittsburgh . 80&20% 65&10% Central 80&10&10&24% 65&10% Northwestern . 80&10&00% 65&10%
\$2.50	Northwestern . 80&10&10% 65&10% Western 80&10% 60&10&5%
y, \$5.50; \$5.00	
rs, Crow.	Southwestern . 75&10&2\\\% 60&5\\% Terms.—2\% for eash. Factory shipmeets
	generally delivered. Note.—Lower prices are made in some
50%	sections.
doz. \$3.50	See also Conductor Pipe and Elbows. Elbows and Shoes—
Iamilton doz. \$3.00 doz. \$2.50	Factorio shipments all territories:
	Gato, Steet and Gato C. 1
SS- 40%	Standard Gauge 85@85&10% No. 26
40% 60% 40%	NO. EE
	Elbows, Stove Pipe-
30 % 05 406 407	Edwards, Standard Blue40&10&10% Edwards, Royal Blue40&10&10% Reeves, Dover, one piece40&10%
25 \$50 \$60	Emery, Turkish—
5@25&7%% 40&7%%	
doz. 331/4%	\$\\ \\ \text{4 to} \text{54 to} \\ \\ \text{46:} \text{280:} \text{Flour.} \\ \text{Kegs.} \text{1b.} \text{54\text{4c}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54}}} \text{54\text{54\text{54\text{54}}} \text{54\text{54\text{54\text{54\text{54}}}} \text{54\text{54\text{54\text{54}}} \qua
00 000 00	1/2 Kegslb. 51/4¢ 53/4¢ 53/4¢ 53/4¢ 6 ¢ 4 ¢
.40@40&5% .60&10&5% oz, 40@50% 520 322	10 in case61/4 7 4 6 4
	10-10 cane less
z. \$24.00,	NOTE.—In lots 1 to 3 tons a discount or
10&10% No. 2, 45&10&10%	10% is given. Extractors, Lemon Juice—
\$18.00 25@30%	—See Squeezers, Lemon.

2000	THE IR	ON AGE	June 25, 1908
Fasteners, Blind— Zimmerman's	Grease, Axle— Common Gradegro.\$6.00@\$6.50 Dixon's Everlasting, 10-1b, pails, ea. 85¢; in boxes, \$\psi\$ doz., 1 \text{ b}, \$1.20; 2 \text{ b} \$2.00 Helmet Hard Oil \$25% Griddles, Soapstone— Pike Mfg. Co \$33\psi @33\psi &10\psi Grindles— Royal Mfg. Co.:	Allith Mfg. Co.; Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Re- Hable Parlor Door	Stanley's Steel Gravity Blind Hinges, No. 1647%, \$\partial dos, sets, without screws, \$0.95; with screws, \$1.25. Wrightsville Hardware Co.: O. S., Lull & Porter
Red Cedar	Alundum Grinding Machines, each, Nos. 91, \$1.75; 1A, \$2.69; 10, \$6.00 and Nos. 20, \$6.00; 20A, \$6.00; 20A Combined, \$6.50	Railroad .50% Cronk & Carrier Mfg. Co: Loose Axle	No. 3
John Sommer's I.X.L. Cork Lined. 59% John Sommer's Heliable Cork Lined. John Sommer's Chicago Cork Lined. 60% John Sommer's O. K. Cork Lined. 60% John Sommer's Perfection, Cedar 50% Self Measuring: Enterprise, \$\pi\$ dox, \$36.00 40&10% Lane's, \$\pi\$ dox, \$36.00 40&10% National Measuring, \$\pi\$ dox, \$38.40&10% Fellos Plates— See Plates, Felloc. Files— Domestic— List Nov. 1, 1899. Best Brands 70&10@75&10%	Ball Bearing, mounted 40% Grips, Nipple	Barn Door, Standard	Latches only
Standard Brands 75&10@80% Lower Grade 75&10@10@80&10% Stubs' Tapers, Stubs' list, July 24, '97. 33½@40% Fixtures, Fire Door Allth Underwriters' Approved Allth Underwriters' Approved 50% Richards Mfg. Co.: Universal, No. 103; Special, No. 104 104 33.75 Fusible Links, No. 96. 50% Expansion Bolts, No. 107. 60&10% Grindstone	Hemp Hope	Hinged Hangers, King Charlin. 60%. Richards Mfg. Co.; 148, 147, 247, 60&5%. Pioneer Wood Track, No. 3 42. 25. 25. 25. 25. 25. 25. 25. 26. 26. 27. 27. 27. 27. 27. 27. 27. 27. 27. 27	Bommer Bros. Pivot
Net Prices: Inch15 17 19 21 Per doz\$3.80 3.85 4.15 4.65 P. S. & W. Co	Riveting	\$2.45; No, 150	Chicago Spring Butt Co.: Chicago Spring Hinges
using list of August 1, 1899, or selling at net prices. Iowa Dig Ezy Potato	3 to 5 lb., per lb., 40¢ 80&10&10% Over 5 lb., per lb., 30¢ Handles— Agricultural Tool Handles Axe, Pick, dc 60&10@60&10&5% Hoe, Rake, dc 40% Fork, Shovel, Spade, dc.: Long Handles 40% Oross-Cut Saw Handles Atkins 40% Champion 50%	41, 43, 44, Sizes 1 and 2.70&7% Anti-friction, No. 42; No. 44; sizes 2% and 3	Columbian Hinges
Acme Hay	Disston's	\$9.00; No. 18, Loops	Hinge 56% Rail Bearing Door. 25% No. 77, Sheet Steel Holdb'k, Barring Door. 25% No. 77, Sheet Steel Holdb'k, Barring Steel Holdb'k, Barring Steel Acting Door Hinge 25&10&10% Standard Double Acting Floor Hinge 25&10&10% Superior Spring Hinge Co.: Superior Floor Hinges. 33% Wrought Iron Hinges. Strap and T Hinges, &c., list December 20. 1904;
Fruit and Jelly Presses— See Presses, Fruit and Jelly. Fry Pans—See Pans, Fry. Fuse—Per 1000 Feet. Hemp	Hammer, Hatchet, &c., 60&10@60&10&5% Hand Saw, Varnished, doz., 80& 85¢; Not Varnished	McKinney's Perfect Hasp, \$\psi\$ dos60% Hatchets— Regular list, first gual.40&2½@— Second quality	Light Strap Hinges. 50&10% Heavy Strap Hinges. 60&5% Light T Hinges 50% Heavy T Hinges 40% Extra Hvy. T Hinges. 50&10% Hinge Hasps 33 ½ % Cor. Heavy Strap 60&5% Screw Hook
Clates, Molasses and Oil— Stebbins' Pattern80@8045% Gauges—	Screw Driver	Hinges— Blind and Shutter Hinges Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O., P.; Clark's Tip; Buffalo.) No 1 3 Doz. pair \$0.75 1.35 2.70	Screw Hook and Eye: "In I luch
Numbered assort- ments, per gro. Nail, Metal, No. 1, \$2.00; 2, \$2.30 Spike, Metal, No. 1, \$2.00; 2, \$2.30 Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60 Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60 Glass, American Window See Trade Report. Glasses, Level—	Sledge, \$\psi\$ doz., oval, 30 in., \$3.80; oval, 36 in., \$3.80; oval, 36 in., \$3.80; oval, 36 in., \$4.00; octagon, 36 in., \$4.00; octagon, 36 in., \$4.00. Axe, \$\psi\$ doz., 26 to 34 in., \$5.60; 36 in., \$5.80. Adze, \$\psi\$ doz., 36 in., \$5.90; 36 in., \$7.80. Pick, \$\psi\$ doz. R. R., 36 in., \$8.00; coal, 34 in., \$5.80. Hatchet, \$\psi\$ doz., 12 to 14 in.,	Mortise Shutter: (L. & P.O. S., Acme, &c.) No	Inch
Glue, Liquid Fish— Bottles or Cane, with Brush, 25610@50%	Hangers NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parior Door Hangers per double set	Parker Wire Goods Co. Hale & Benjamir Automatic Blind Hinges 20% Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00. 20% Reading's Gravity. 60%	Grub, list Feb. 23, 1899. Tok 10@70&10&10 D. & H. Scovil

	2.10	V.1 1100	
Handled- NOTE - Manufacturers are selling	Kettles-	Machines-Boring-	Oakum
NOTE. — Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au- gust 1, 1899, or selling at net prices.	Brass, Spun, Plain20@25% Enameled and Cast Iron—See Ware,	Com. Upr't, without Augers, \$2.00@2.25	Best U. S. Na
Cronk's Weeding, No. 1,\$2.00; No. 2,\$2,50 Star Double Bit\$3.20	Hollow.	Com. Angl'r, without Augers, \$2.25@2.50	Navy Plumbers
ronk's Weeding, No. 1,\$2.00; No. 2,\$2.50 thar Double Bit. \$3.20 1. Marison Cotton Hoe. 70&10&10/10/ 1. Madison Crescent Cultivator Hoe,	Butcher, Kitchen, &c	Swan's Improved	Oilers
Madison Mattack Hoos:	Foster Bros.' Butcher, &c30% Wilkinson Shear & Cutlery Co60%	Millers' Falls	Steel, Con
Hegular Weight	Corn—Columbian Cutlery Co., Wilcut	Corking— Reisinger Invincible Hand Power	Chase or Brass a
60&10% Ft. Madison Dixie Tobacco Hoe75&10&74%	Columbian Cutlery Co., Wilcut Brand Knives and Hooks	₩ doz. \$48.00	Zinc Railroad Malleable,
708-10°	Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.	Williams' Fence Machines each, \$5.50	11, 12 an Nos. 1, 2 American 7
V. & C. Ivanhoe	Drawing	Hoisting- Moore's Anti-Friction Chain Hoist.30%	Spring Be
retsinger's Ut Sassy. 45&10% V. & C. Ivanhoe. 75&2% B. 6 in, Cultivator Hoe. 33.40 B. 6, 6/4 in 33.50 Came Wedding. \$\partial doz., net, \$\partial 4.35 V. & C. L'tning Shuffle Hoe, \$\partial doz.\$\$, 25	Standard List80&10@-% C. E. Jennings & Co., Nos. 45, 46, 25&17/2%	Moore's Hand Hoist, with Lock Brake20% Moore's Cyclone High Speed Chain	Railroad Maple City Spring B
Hoisting Apparatus—	Jennings & Griffin, Nos. 41, 42, 66%&7½% Swan's	Hoist	Railroad
See Machines, Hoisting. Holders— Bit—	L. & L. J. White20&5@25%	Chandler's121/4% Washing	Herculeve
ngular, # doz. \$24.0045&10% Door—	Hay and Straw— Serrated Edge, per doz.\$5.50@5.75 Iwan's Sickle Edge	Boss Washing Machine Co.: Per doz. Boss No. \$57.00 Boss Rotary \$57.00	Sprague,
ardsley's, Iron, 40%; Brass and	Iwan's Sickle Edge # doz. \$9.50 Iwan's Serrated # doz. \$10.00	Champion Rotary Banner No. 1.\$57.00	Sprague, Sardine & Yankee · C
mpire	Miscellaneous— Farriers'doz.\$2.60@3.55	Standard Champion No. 1\$50.00 Standard Perfection\$27,00 Cincinnati Square Western\$33.00	a doz.,
	Wostenholm's	Cincinnati Square Western\$33.00 Uneeda American, Round\$33.60	Hartigan I
perior	Base, 2½-inch, Birch or Maple, Rubber Tipgro.\$1.25@1.40	Hickory	Silver Pl
landles	Carriage, Jap., all sizes, gro.40@45¢	Lignumvitæ	Ashestos
Fruit Jar— iumph Fruit Jar Holder, \$\pi\$ gross, 10.80; \$\pi\$ doz	Door, Mineraldoz.65@70¢ Door, Por. Jap'ddoz.70@75¢ Door, Por. Nickeldoz.\$2.05@2.15	Mangers, Stable—	Rope, a
Trace and Rein- mald Double Trace Holder, 19 doz.	Door, Por. Nickeldoz.\$2.05@2.15 Bardsley's Wood Door, Shutters, &c.15%	Swett Iron Works50% Mats, Door—	Sheet, O.
ash Rein Holder, 🗘 doz. pairs.\$1,25	Lacing, Leather-	Acme Flexible Steel50% Elastic Steel (W. G. Co.), new list.50%	Sheet, C.
lones_Razor_	See Belting, Leather Ladders, Store, &c.—	Mattocks-	Sheet, C. Sheet, Pa Sheet, Re Jenkins' '9
e Mfg. Co., Belgian and Swaty, %; German33½%	Allith Mfg. Co., Reliable50% Lane's Store25% Myers' Noiseless Store Ladders50%	See Picks and Mattocks. Milk Cans—See Cans, Milk.	Mis
looks—Cast Iron—	Myers' Noiseless Store Ladders50% Richards Mfg. Co.:	Mills, Coffee, &c	American Cotton P Italian I
hes Line, Reading List	Richards Mfg. Co.: 1 50% Improved Noiseless No. 11250% 50% Climax Shelf, No. 11350% 50% Trolley, No. 10950% 50%	Enterprise Mfg. Co	Jute Russia P
Wire-	Ladles, Melting-	Parker's Box and Side50&10% Swift, Lane Bros. Co30%	Pails,
e C. & H. Hooks80%	L. & G. Mfg. Co. (low list)20% P., S. & W	Motors, Water	Pans-
	Lanterns-Tubular-	Divine's Red Devil	Standard Edwards,
dley Mctal Clash Wife, Cost and at, 70&10%; Ceiling,	Regular, No. 0doz.\$4.35@4.50 Side Lift, No. 0doz.\$4.60@4.75 Hinge Globe, No. 0.doz.\$4.60@4.75	NOTE.—Net prices are generally quoted	Common Nos
cme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%;	Other Styles40@40&10% Bull's Eye Police—	Cheapest, 10-in., \$2.00; advance 10¢ for each size.	Per do
wrought Iron-	3-inch\$4.25@4.50	Cheap, 10-in., \$2.25; advance 15@ 20¢ for each size.	Inch
6 in., per doz., \$0.90; 8 in., 5.	Latches— Thumb- Roggin's Latches, with screw,	Better Grade, 10-in., \$3.00; advance 25¢ for each size.	Per doz.
on	Door-	High Grade \$4.50 4.75 5.00 5.25	Asbestos: Roll Bo
Miscellaneous -	Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50% Cronk & Carrier Mfg. Co., No. 101.	Continental	6 to
ks, Bench, see Stops, Bench. h, Light, doz., \$6.20; Medium. \$6.75; Heavy, \$7.65 ss, best, all sizes, per doz.	Cronk & Carrier Mig. Co., No. 101,	Quaker City	Roll Bo
ss, best, all sizes, per doz., \$2.75@\$3.00	Richards Trump, No. 127\$1,50	Pennsylvania Golf	mill Bo
s, common grades, all sizes,	Smalldoz.50¢; large, 60¢	Pennsylvania Golf	Rosin Siz
88, common grades, all sizes, r doz	Smalldoz.50¢; large, 60¢ Covert Mfg. Co.; Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.	Granite State: Style A, Low Wheel 70% Style B, Low Wheel 70% Style C, High Wheel, spcl, list, 70% 1006-10%	Light w
cass	Leathers, Pump—	Style C, High Wheel, spcl, list, 70&10%	Medium
rt Mfg. Co. Gate and Scuttle oks	See Pumps— Lifters, Transom—	Style D, High Wheel, spcl, list70% Philadelphia: Styles M., S., C., K., T70&10&5%	Heavy
Madison Cut-Easy Corn Hooks, Wadison Cut-Easy Corn Hooks, doz, \$3.25 net er & Stanton Co, Cup and oulder	R. & E	Styles M., S., C., K., T 70&10&5% Style A, all Steel 60&10&5% Style E, High Wheel 70&10&5% Dreyel and Cald Coin appedial list 40	Black W 500 sq. 85¢; 3
ch Hooks—See Bench Stops.	Wire Clothes, Nos. 18 19 20 100 feet \$2.50 2.25 2.00	Drexel and Gold Coin, special list.40% Horse	Deafening ft. to li
orsa Nails— See Nails, Horse.	Samson Cordage Works: Solid Braided Chalk Nos 0 to 3 48%	Horse	Red Rop
forseshoes-	100 feet \$2.50 2.25 2.00 75 feet \$2.10 1.80 1.65 Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3.49 Solid Braided Masons: 30% Silvet Lake Braided Chalk, No. 0, \$4.00 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50. Masons' Lines, Shade Cord, &c. White Cotton, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.20; Colors, No. 3½, \$1.75; No. 4, \$2.20; No. 42, \$2.75; Linen, No. 3½, \$2.50; No. 43, \$2.75; Linen, No. 3½, \$2.50; No. 4, \$3.50 No. 4½, \$4.50. Tent and Awning Lines; No. 5, White Cotton, \$7.50; Drab Cotton, \$8.50.	Nails-	1 ply (re
See Shoes, Horses.	\$6,00; No. 1, \$6,50; No. 2, \$7,00; No. 3, \$7,50	Wire Nails and Brads, Miscel-	2 ply, rol
den Hone W. inch .	White Cotton, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.50; Colors, No. 3½,	laneous	3 ply, ro Stater's
ompetition	\$1.75; No. 4, \$2.25; No. 4½, \$2.75; Linen, No. 3½, \$2.50; No. 4, \$3.50; No. 4½, \$4.50	Hungarian, Finishing, Upholsterers', &c. See Tacks.	Sand Flint and
ton Gurden, 4-in., coupled: w Grade	Tent and Awning Lines: No. 5, White Cotton, \$7.50; Drab Cotton.	Horse-	Garnet I
ow Grade	white Cotton, \$4.39; Drab Cotton, \$8.50	Nos. 6 7 8 9 10 Anchor	Goodell Co
ns— Sad— m 4 to 101b.3@34¢ B. Sad Irons1b.34@3½¢	ft. \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25	New Haven. 23 21 20 19 1840&5% Livingston 19 18 17 16 1610%	Improved
. Potts', cents per set:	Turner & Stanton Co.; Solid Braided Chalk, Masons' and	Jobbers' Special Brands,	New Lig Turn Ta White M
Nos. 50 55 60 65 19'd Tops83 80 93 91 10'd Tops88 85 98 95 10 England Pressinglb.34.44	Awning Lines	Fictare	Bonanza Dandy . Eureka
v England Pressinglb.34,44	Locks— Cabinet— Cabinet Locks33 1/3 %	Brass Hd, gro45 .55 .60 .70 Por. Head, gro 1.10 1.10 1.10	New Cer Ranger
	Unushes 1/0000	Upholsters—	Daisy
Bar and Corner— hards Mfg. Co., Bar. 60&10%:	Door Locks, Latches, &c -	- Opilolotoi o	Fullie 91
Bar and Corner— nards Mfg, Co., Bar, 60&10%;	Door Locks, Latches, &c -	Brass	Reading H
Bar and Corner— ards Mfg. Co., Bar, 60&10%; mer	Door Locks, Latches, &c NOTE.—Net Prices are very often mude on these goods. Reading Hardware Co	Brass	Reading H Advance Baldwin
Bar and Corner— ards Mfg. Co., Bar, 60&10%; mer	Door Locks, Latches, &c NOTE.—Not Prices are very often mude on these goods. Reading Hardware Co	Brass	Reading H
Bar and Corner— chards Mfg. Co., Bar, 60&10%; corner Pinking— 63% Rking Irons. 69z.60@65¢ Irons, Soldering See Coppers.	Door Locks, Latches, &c NOTE.—Net Prices are very often medie on these goods. Reading Hardware Co	Brass	Reading B Advance Baldwin Reading Reading
Bar and Corner— chards Mfg. Co., Bar, 60&10%; corner Pinking— 63% Rking Irons. 69z.60@65¢ Irons, Soldering See Coppers.	Door Locks, Latches, &c NOTE.—Net Prices are very often medie on these goods. Reading Hardware Co	Brass	Reading H Advance Baldwin Reading Reading Reading White Mo
Bar and Corner— ichards Mfg, Co., Bar, 60&10%; Corner S1% inking Irons, Soldering Irons, Soldering	Door Locks, Latches, &c NOTE.—Net P-lees are very often muses on these goods. Reading Hardware Co	Brass	Reading H Advance Baldwin

Best	
Plumbers' Spun Oakum24@3 & Oil Tanks—See Tanks, Oil.	
Steel, Copper Plated75%	
Chase or Paragon: Brass and Copper	
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern,	
Nos. 1, 2, 3, 50%. American Tube & Stamping Co.: Spring Bottom Cans70@70&10%	
Maple City Mfg. Co.: Spring Bottom Cans	
Obeliers - Packing Box-	
Herculever, per doz. \$2130% Can Op ners— Per doz.	
Sprague, Wood Handle 35@40¢ Sardine Scissors \$1.75@3.00	
Sprague, Iron Handle	
Hartigan Nickel Plate, \$\pi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Packing- Asbestos Packing. Wick and	
kope, any quantity20¢	
(Fair quality goods.) Sheet, C. I	
Rubber Faber Fab	
Jenkins '96, 10 b, 80¢25% Miscellaneous—	
Cotton Packinglb. 16@25 ¢ Italian Packinglb. 9@12½¢	
American Packing 1b. 7@10 ¢	
Pans— Dripping—	
Standard List65&71/2@70% Edwards, Royal Blue65&71/2%	
Fry— Common Lipped: Nos 1 2 3 4 5 Per doz\$0.75 0.80 0.90 1.10 1.30	
Refrigerator, Galva	
Per doz\$1.75 2.25 2.80 3.15 Paper—Building Paper Asbestos: 1b.	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft., 24@3\$	
Roll Board or Building Felt, 3-32 and 1/4 in., 45 to 60 lb.,	
per 100 sq. ft	
Light weight, 25 lbs. to roll.	
Medium weight, 30 lbs. to roll. 56@70¢	
Heavy weight, 40 lbs. to roll, 75@78¢	
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25. Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	
ft. to lb., ton	
Tarred Paper— 1 ply (roll 400 sq. ft.), ton, \$34,00@\$38.00	
2 ply, roll 108 sq. ft 65¢ 3 ply, roll 108 sq. ft 88¢ Slater's Felt (roll 500 sq. ft.) . 80¢	
Sand Paper and Cloth-	
Flint and Emery50&10% Garnet Paper and Cloth25%	
Parers—Apple— Goodell Co.: Family Bay State doz. \$15.00	
New Lightning	
Bonanza Improvedeach \$7.50 Dandyeach \$10.07 Eureka Improvedeach \$20.00	
New Centuryeach \$20.00 Rangereach \$25.00 Livingston Nail Co.;	
Parers - Apple - Goodell Co.: Family Bay State #9 doz. \$15.00 Improved Bay State #9 doz. \$36.00 Improved Lightning #9 doz. \$3.00 White Mountain #9 doz. \$3.00 White Mountain #9 doz. \$3.00 White Mountain #9 doz. \$3.00 Bonanza Improved each \$10.07 Eureka Improved each \$20.00 New Century each \$20.00 New Century each \$20.00 Ranger each \$25.00 Livingston Nail Co.: Daisy #9 doz. \$4.00 Little Stat #9 doz. \$6.20 Reading Hardware Co.: Advance #9 doz. \$6.20 Reading Hardware Co.: Advance #9 doz. \$4.00 Reading 72 #9 doz. \$3.05 Reading 73 #9 doz. \$3.05 Reading 75 #9 doz. \$3.05 Reading 77 #9 doz. \$3.05 Reading 78 #9 doz. \$3.05 Re	
Advance	
Reading 78	
White Mountain	
(List Jan., 1908.) List 70&10@70&10&10% Cronk's Hand'ed Garden Mattock, & doz., No. 2, \$2.60; No. 3, \$6.40.	
i 4 doz., No. 2, \$2.60; No. 3, \$6.40.	

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Pinking Irons— See Irons, Pinking.	
Pins, Escutcheon—	
Brass	
Pipe, Cast Iron Soil-	
Standard, 2-6 in60&5@ $-\%$ Extra Heavy, 2-6 in70&5@ $-\%$ Fittings, Standard and Heavy, 70&10@75%	
Pipe, Merchant-	
Consumers, Carloads, Steel. Iron. Blk. Galv. Blk. Galv.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Pipe, Vitrified Sewer-	
Carload lots. Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory: First-class87% Second-class90%	-
Pipe, Stove-	
Edwards' Nested: C. L. L. C. L. 5 in., Standard Blue \$6,25 \ 87,25 6 in., Standard Blue \$6,25 \ 87,25 7 in., Standard Blue \$7,5 \ 7.55 5 in., Royal Blue \$7,50 \ 8.50 7 in., Royal Blue \$7,50 \ 8.50 7 in., Royal Blue \$1,50 \ 8.50 7 in., Royal Blue \$3,50 \ 9.50 Wheeling Corrugating Co. a Nested: 5 in., Uniform Color. \$8,15 6 in., Uniform Color. 7.65 7 in., Uniform Color. 7.66 8,65	
Planes and Plane Irons-	
Wood Planes-	
Bench, first qual30@30&10% Bench, second qual40@40&10% Molding25@25&10%	
Bench, first qual30@30&10 % Bench, second qual40@40&10 % Modding25@25&10 % Chapin-Stephens Co.: Bench, First Quality30 % Bench, Second Quality40 % Molding and Miscellaneous	
Iron Planes -	l
Chaplin's Iron Planes50&10% Union60%	l
Plane Irons Wood Bench Plane Irons, list Dec. 12, '06	
Kohler's Eclipse	ı
Plates-	
Felloe	
Pliers and Nippers -	
Button Pliers75&5@75&10&5% Gas Burners, per doz., 5 in., \$1.25 @\$1.30; 6 in., \$1.45 \$1.50. Gas Pipe 7 8 10 18-in.	
Gas Pipe. 7 8 10 13-in. 22.00 \$2.25 \$2.75 \$5.50 Acme Nippers	1
Cronk & Carrier Mfg, Co.: American Button	
Plumbs and Levels-	l
Charle Stankana Co.	I
Chapin-stephens Co.; Plumbs and Levels	
Points, Glaziers'-	1
Bulk and 1-lb. papers lb. 9 & 1/2-lb. papers lb. 91/2 & 1/2-lb. papers lb. 10 & 10 de 10 d	
Police Goods—	-
Manufacturers' Lists 25@25d5% Tower's	
	-11

2068	THE IR	ON AGE	June 25, 1908
Pinking Irons—	George William Hoffman:	Barnes Pitcher Spout	Registers—List July 1, 1903.
See Irons, Pinking.	George William Hoffman; U. S. Metal Polish Paste, 3 os. boxes, \$\psi\$ dos. \$\psi\$ of; \$\pi\$ gro. \$4.50; \$\frac{1}{2}\$ fb boxes, \$\pi\$ dos. \$1.25; 1 fb boxes, \$\pi\$ dos. \$2.25. U. S. Liquid, \$\pi\$ oz. cans, \$\pi\$ doz.,	Barnes Pitcher Spout	Japanned, Electroplated and
Pins, Escutcheon-	1/2 lb boxes, 10 doz. \$1.25; 1 lb boxes, 10 doz. \$2.25.	Daisy Spray Pump @ doz. \$6.50 Flint & Walling's Fast Mail Hand	Bronzed
Brass50@50&10%	01,20	(low list)50% Flint & Walling's Fast Mail (low	Solid Brass or Bronze Metal. 40%
Iron, list Nov. 11, '85 60@60&10%	Barkeepers' Friend Metal Polish, and doz., \$1,75.	Flint & Walling's Tight Top	Revolvers-
Pipe, Cast Iron Soil-	Stove-	list	Single Action
Standard, 2-6 in60&5@-% Extra Heavy, 2-6 in70&5@-%	Black Eagle Benzine Paste, 5 fb cans,	ing, Nos. 2, \$6.00; 3, \$5.5030% Myers' Pumps (low list)40&5%	Double Action, except 44 cal.\$2.00
Extra Heavy, 2-6 in70&5@-% Fittings, Standard and Heavy,	Black Eagle, Liquid, ½ pt. cans	Myers' Power Pumps40&5% Myers' Spray Pumps40&5%	Double Action, 44 caliber\$2.00 Automatic \$4.00 Hammerless \$4.50
70&10@75%	Black Jack Paste, % fb cans, #g gr. \$9.00 Black Kid Paste, 5 fb caneach, \$0.65 Ladd's Black Beauty Liquid, per	Pump Leathers-	
Pipe, Merchant-	100 tins	Plunger and Valve Leathers—Per gro.:	Riddles, Hardware Grade
Consumers, Carloads, Steel. Iron.	Dixon's Plumbago	No 1 2 3 4 \$5.00 6.00 7.00 8.00 5	16 inper doz.\$2.50@\$2.75 17 inper doz.\$2.75@\$3.00
Blk. Galv. Blk. Galv.	Gem, # gr. \$4.50	Cun Leathers-Per 100:	18 inper doz.\$3.00@\$3.25
% and ¼ in . 64 48 62	Jet Black	Inch 21/2 3 31/2 4 \$5.00 7.00 9.00 12.00	Rings and Ringers—
½ and ¼ in. 6i 48 62 56 in	₩ doz. \$1.50	Punches—	Bull Rings—
% to 6 in 72 - 62 70 60 7 to 12 in 69 54 67 52	Poppers, Corn— 1 qt. Squaredoz.\$0.80; gro.\$8.75	Saddlers' or Drive, good,	Steel \$0.70 0.75 0.80 doz. Copper \$1.10 1.25 1.65 doz.
Pipe, Vitrified Sewer	1 qt. Round doz . \$0.90; gro . \$10.00	Spring, single tube, good qual-	Hog Rings and Ringers-
Carload lots.	1½ qt. Square. doz.\$1.00; gro.\$11.00 2 qt. Squaredoz.\$1.25; gro.\$13.50	itai	Hill's Rings, gro. boxes.\$4.50@\$4.50
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:	Post Hole and Tree Au-	Revolving (4 tubes) doz. \$3.50 Bemis & Call Co.'s Cast St'l Drive.50% Morrill's Nos. 1AA, 1A, 1B, 1C,	Hill's Ringers, Gray Iron, doz., 60@75¢
First-class	gers and Diggers—	1D, \$15.00	Hill's Ringers, Malleable Iron, doz.80@95¢
Pipe, Stove—	See also Diggers, Post Hole, &c.	Niagara Hollow Punches40% Niagara Solid Punches55&10%	Blair's Rings per gro . \$5.00@\$5.50
Per 100 juints.	Posts, Steel— Steel Fence Posts, each, 5 ft., 42¢:	MOTHI'S NOS. IAA, IA, IB, IC, ID, ID, \$15.00	Blair's Ringersper doz.75@90¢
Edwards' Nested: C. L. L. C. L. 5 in., Standard Blue\$6.25 \$7.25 6 in., Standard Blue 6.75 7.75	Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢. Steel Hitching Postseach \$1.30	doz., \$1.4440%	Rivets and Burrs—
7 in., Standard Blue 7.75 8.75	Potato Parers-	Rall-Barn Door, &c	Copper
5 in., Royal Blue 7.00 8.00 6 in., Royal Blue 7.50 8.50 7 in. Royal Blue 8.50 9.50	See Parers, Potato.	Suding Door. Painted Iron,	Metallic Tinned
Wheeling Corrugating Co.'s Nested:	Pots, Glue— Enameled	Sliding Door, Wrought Brass,	Bifurcated and Tubular-
5 in., Uniform Color. \$6.15 \$7.15 6 in., Uniform Color. 6.65 7.65 7 in., Uniform Color. 7.65 8,65	Tinned	11/8 in., ib., Sec	Assorted in Boxes. Bifurcated, per doz. boxes, paste-
Planes and Plane Irons—	In Canisters:	Cronk's:	board boxes, 50 count, 25@25¢; Tin boxes, 100 count, 29@32¢.
Wood Planes-	Duck, 1 lbeach 45¢ Fine Sporting, 1 lbeach 75¢	Double Braced Steel Rail. #9 ft. 3¼ ¢ O. N. T. Rail\$3.12	Tubular, per doz. boxes, 50 count,
Rench. first qual 30@30&10%	Rifle, 14-lheach 164 Rifle, 1 lbeach 25¢	Griffin's:	29@32¢; 100 count, 51@58¢.
Bench, second qual40@40&10% Molding25@25&10%	In Keas:	xxx, \$\vec{1}\$ 100 ft., 1 x 3-16 in., \$3.25; 114 x 3-16 in., \$3.75. Hinged Hanger, \$\vec{1}\$ 100 ft., 1 x 3-16 in., \$3.50; 114 x 3-16 in., \$4.00.	Rollers-
Chanin-Stanhans Co .	12½-lb, kegs	in., \$3.50; 1¼ x 3-16 in., \$4.00. Lane's:	Cronk's Stay, No. 50\$1.00 Cronk's Brinkerhoff No. 55, \$0.60; No. 56, \$0.75; No. 60\$0.75
Bench, First Quality	King's Semi-Smokeless: Keg (25 fb bulk)\$6.50	Hingod Track 39 100 ft \$3.45	Lane s Stay
Toy and German, 30% Union 60%	Keg (25 fb bulk). \$6.50 Half Keg (12½ fb bulk). \$3.50 Quarter Keg (6¼ fb bulk). \$1.90 Case 24 (1 fb cans bulk). \$8.50 Half case (1 fb cans bulk). \$4.50	O. N. T., \$\text{9} 100 ft., 1 in., \$3.00; 1\frac{1}{4} in., \$3.45; 1\frac{1}{4} in., \$4.00. Standard, 1\frac{1}{4} in \$\text{9} 100 ft. \$4.00	Richards' Stay: Handy Adj. and Reversible No. 53.75¢ O. K. Adj. and Reversible No. 58.50¢
Iron Planes -	Half case (1 b cans bulk)\$4.50	Lawrence Bros.: 1 x 3-16 in., 39 100 ft., \$7.50; 1½ x 3-16 in., \$8.75	Lag Screw, Nos. 55 and 5750% Underwriters', Nos. 59, 6050% Favorite, No. 5460%
Chaplin's Iron Planes50&10%	King's Smokeless: Shot Gun, Rifle, Keg (25 lb bulk)\$12.00 \$15.00	3-16 in., \$8.7555&7½% McKinney's:	_
Union	Keg (25 b bulk)	Hinged Hanger Track, 19 ft., 11¢.	Manila 7 46 in diam and laws
Wood Bench Plane Irons, list	Han Case 12 (1 10 C, DE) 1,25 8,15	1 x 3-16 Track	Manila, 7-16 in. diam. and larger: Purelb. 10@101/4¢
Dec. 12, '06	Presses— Fruit and Jelly—		Sisal, 7-16 in. diam. and larger: Purelb7½@7¾¢
Chanin-Stephens Co	Enterprise Mfg. Co20@25%	Richards Mfg. Co.: Common, 1 x 3-16 in., \$3,00; 116 x 3-16, \$3.25; 114 x 3-16, \$3.50. Special Hinged Hanger Rail60&10% Lag Screw Rail, No. 65	Sisal, 7-16 in. diam. and larger: lower gradelb., 642@7\$
Union	Seal Presses— Morrill's No. 1, \$\text{10} \doz., \$20.0050\text{\%}	Lag Screw Rail, No. 6550% Gauge Trolley Track, 30 ft., No. 31.	Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Planters, Corn, Hand-	Pruning Hooks and Shears	9¢; No. 32, 14¢; No. 33, 20¢. No. 50	Mixedlb., 61/2@63/4¢ Purelb., 71/2@73/4¢
Kohler's Eclipse # doz. \$8.00	See Shears.	Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64, \$4.00; 45, \$3.25; 46, \$3.50; 49, No. 1,	Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Plates—	Pullers, Nail—		Mixedlb., 5@51/2¢
Felloe	Cyclops	NOTE.—Many goods are sold	Pure
Pliers and Nippers -	Morrill's No. 1. Nail Puller, 30 doz.	at net prices.	Best, ¼-in. and larger18@20¢ Medium, ¼-in. and larger.16@17¢
Button Pliers75&5@75&10&5% Gas Burners, per doz., 5 in., \$1.25	Pearson No. 1, Cyclone Spike Puller,	Fort Madison Red Head Lawn\$3.25 Fort Madison Blue Head Lawn\$2.7)	Medium, ¼-in. and larger.16@17¢ Common, ¼-in. and larger10¢ In coils, ½¢ advance.
@\$1.30; 6 in., \$1.45 \$1.50. Gas Pipe. 7 8 10 18-in.	each \$30.00	Cronk's: Steel Garden: Champion, 75%:	Thread No. 1. 4-in, and up.
\$2.00 \$2.25 \$2.75 \$3.50 Acme Nippers	No. 3B (small)\$5.00 Smith & Hemenway Co.:	Cronk's: Steel Garden: Champion, 75%; Ideal, 80%; Victor80&25% Queen City Lawn, 49 doz., 20 teeth, \$2.85: 24, \$3.00	lb
Cronk & Carrier Mfg, Co.:	Giant	\$2.85; 24, \$3.00net Anticlog Lawn, \$0 doz\$4.0)	16
American Button	Staple Pullers, Utica and Davi-	\$2.85; 24, 53.00; words, words, words, a technicos Lawn, words, w	Wire Rope— Galvanized
Cronk's	Pulleys, Single Wheel-		Plain
Stub's Pattern45% Combination and others33%% Heller's Farriers' Nippers Pincers	Inch	Lawn Queen, 20-tooth	Ropes, Hammock— Covert Mfg. Co.:
Heller's Farriers' Nippers, Pincers and Tools	Hay Fork, Swivel or Solid Eye,	Paragon, 24-tooth	Covert Mfg. Co.: Jute, 35%; Sisal20%
P., S. & W. Tinners' Cutting Nip- pers	doz., 4 in., \$1.25; 5 in., \$1.55	Malleable Garden, 14-tooth, # doz. \$2.40	Rowrood socsonia
Swedish Side, End and Diagonal Cutting Pliers	Inch	Rasps, Horse—	Boxwood
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds40%	Hot House, doz\$0.65 .85 1.20 Inch11/4 11/2 13/4 2 Screw, doz\$0.16 .19 .23 .30		B0XW00d
Plumbs and Levels—	Inch 134 2 214 21/2 Side, doz \$0.25 40 55 60	Disston's	Figure 10 10 10 10 10 10 10 1
Chapin-Stephens Co.:	Inch	McCarrey's American Standard 60&10&5%	Stephens' Combination
Plumbs and Levels30@30&10% Chapin's Imp. Brass Cor40@40&10%	Sash Pulleys- Common Frame; Square or	New Nicholson70&10@75% See also Files.	Keuffel & Esser Co.: Folding, Wood35&10%
	Round End, per doz., 1% and 2 in	Razors-	Folding, Steel
Machinists' Levels40@40&10% Disston's Plumbs and Levels60&10%	Auger Mortise no Face Plate	Liana Bo-ras-ic	Lufkin's Lumber
Extension Sights 30@30&10 Machinists' Levels 40@40&10 Disston's Plumbs and Levels 50&10 Disston's Pocket Levels 50&10 Stanley's Dulex 35 Woods' Extension 33%	per doz., 1% and 3 in20@21¢ Acme, No. 351% in., 19¢; 2 in., 20½¢ American Pulley Co.:	Liana Bo-ras-ic	Boxwood
Woods' Extension331/8/		Red Devil	Sash Balances-
Points, Glaziers'-	Wrought Steel, Eagle17@20 ¢ Top Notch, Electrically Welded	Reels, Fishing— Hendryx:	See Balance, Sash.
Bulk and 1-lb. paperslb. 9 & 3/2-lb. paperslb. 9/4c	Axle	M 6, Q 6, A 6, B 6, M 94, M 16, Q 16, A 16, B 16, 4966, Rubber. Populo, Nickeled Populo20%	Sash Locks-See Locke, Sash.
4-lb. papers	Grand respites All Steel Nomelessgu/o	Populo, Nickeled Populo20% Aluminum, German Silv., Bronze.25%	Sash Weights
Police Goods-		1240 N, 124 N	See Weights, Sash. Sausage Stuffers or Fillers
Manufacturers' Lists 25@25d5%	In, 2014 ¢ No. 36 Troy1% in, 1416 ¢; 2 in, 1616 ¢ Star, No. 281% in19 ; 2 in, 2016 ¢ Tackle Blocks—See Blocks.	4 N, 6 PN. 24 N. 26 PN20% 2904 P., 331/5%: 2904 PN., 331/5%.	See Stuffers or Fillers, Sausage.
Tower's	Pumps—	0924 N., 33\%\%\; 02084 N., 33\%\%\; 002904 PN., 33\%\%\; 802 N., 33\%\%\.	Saw Frames-
Prestoline Liquid No. 1 (14 pt) 39	Cistern	5009 PN 5009 N	See Frames, Saw.
Prestoline Liquid, No, 1 (½ pt.), \$\ doz., \$3.00; No, 2 (1 qu.), \$0.0040% Prestoline Paste	Cistern 60 % Pitcher 8pout 75d5@75d10 % Wood Pumps, Tubing, ds 59 % Barnes Dbl. Acting (low list) 4085 %	Aluminum, German Silv., Bronze, 25% 2140 N, 124 N. 20% 3004 N, 08 N, 6 BM, G 9 25% 4 N, 6 PN 24 N, 26 PN 25% 20% 2904 P, 334%; 2904 PN, 334%; 0924 N, 334%; 09204 N, 334%; 002904 N, 334%; 802 N, 334%; 966 PN, 204 N, 974 PN 227 S009 PN 5009 N, 202 PN 5009 N, 202 PN 5009 PN 5009 N, 202 PN 102 PR 202 PN 102 PR 202 PN 102 PR 202 PN 102 PR 202 PN 202 PN 102 PR 202 PN 202 PN 102 PR 202 PN 202 PN 102 PR 202 PN 202 PN 202 PN 102 PR 202 PN 20	Saw Sets—See Sets, Saw. Saw Tools—See Tools, Saw.
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N AGE	June 25, 1908
Barnes Pitcher Spout	Registers-List July 1, 1903.
Contractors' Rubber Diaphragm, No. 2, B, & L. Block Co	
Flint & Walling's Fast Mail Hand (low list)50%	Japanned, Electroplated and Bronzed 70% White Porcelain Enamel. 506.10% Solid Brass or Bronze Metal. 40%
Flint & Walling's Fast Mail (low list)	
list) 50% Flint & Walling's Tight Top Pitcher 75&10% National Specialty Mfg. Co., Measuring, Nos. 2, \$6.00; 3, \$5.50. 30% Myers' Pumps (low list) 40&5% Myers' Power Pumps. 40&55% Myers' Spray Pumps. 40&55%	Revolvers—
ing, Nos. 2, \$6.00; 3, \$5.5030% Myers' Pumps (low list)40&5%	Pouble Action
Myers' Power Pumps40&5% Myers' Spray Pumps40&5%	Double Action, 44 caliber. \$2.00 Automatic \$4.00
Pump Leathers—	Riddles, Hardware Grade
Plunger and Valve Leathers—Per	
No 1 2 3 4 \$5.00 6.00 7.00 8.00 S	16 inper doz.\$2.50@\$2.75 17 inper doz.\$2.75@\$3.00 18 inper doz.\$3.00@\$3.25
\$5.00 6.00 7.00 8.00 Cup Leathers—Per 100: Inch 2½ 3 3½ 4 \$5.00 7.00 9.00 12.00	Rings and Ringers—
	Bull Rings-
Punches— Saddlers' or Drive, good,	Steel
Spring, single tube, good qual-	Copper\$1.10 1.25 1.65 doz. Hog Rings and Ringers
ity \$1.75 Revolving (\(\frac{1}{2}\) tubes) \(\) doz.\\$3.50 Bemis & Call Co.'s Cast St'l Drive.\(50\) Morrill's Nos, IAA, IA, IB, IC,	Hill's Rings, gro. boxes.\$4.50@\$4.50
Bemis & Call Co.'s Cast St'1 Drive.50% Morrill's Nos. 1AA, 1A. 1B, 1C.	Hill's Ringers, Gray Iron, doz.,
1D, \$15.00	Hill's Ringers, Malleable Iron, doz.80@95¢
Niagara Solid Punches55&10% Tinners' Hollow, P., S. & W. Co40%	Blair's Ringsper gro.\$5.00@\$5.50 Blair's Ringersper doz.75@90¢
1D, \$15.00.	Rivets and Burrs-
Rall-Barn Door, &c	Copper
Sliding Door. Painted Iron,	Metallic Tinned70%
Sliding Door, Wrought Brass,	Bifurcated and Tubular-
Sliding Door, Wrought Brass, 1½ in., lb., 36¢	Assorted in Boxes. Bifurcated, per doz. boxes, paste-
Cronk's:	board boxes, 50 count, 25@25¢; Tin boxes, 100 count, 29@32¢.
Double Braced Steel Rail. # ft. 3% ¢ O. N. T. Rail	board boxes, 50 count, 23@25¢; T'in boxes, 100 count, 23@32¢. Tubular, per doz. boxes, 50 count, 23@32¢; 100 count, 51@58¢.
xxx, \$\text{\psi}\$ 100 ft., 1 x 3-16 in., \$3.25; 1\(\frac{1}{2}\) x 3-16 in., \$3.75.	Rollers-
Grimn's: xxx, \$\pi\$ 100 ft., 1 x 3-16 in., \$3.25; 1\pi x 3-16 in., \$3.75. Hinged Hanger, \$\pi\$ 100 ft., 1 x 3-16 in., \$3.50; 1\pi x 3-16 in., \$4.00.	Cronk's Stay, No. 50\$1.00
Lane's	Cronk's Stay No. 50
Hinged Track, \$\text{ \$0 100 ft\$3.45} \\ O. N. T., \$ \$0 100 ft., 1 in., \$\$3.00; 1½ in., \$\$3.45; 1½ in., \$\$4.00. \\ Standard, 1½ in	Richards' Stay: Handy Adj. and Reversible No. 53.75¢
Lawrence Bros.: 1 x 3-16 in., \$9 100 ft., \$7.50; 14 x 3-16 in., \$8.75	Handy Adj. and Reversible No. 53.75¢ O. K. Adj. and Reversible No. 58.50¢ Lag Screw, Nos. 55 and 5750% Underwriters', Nos. 59, 6050% Favorite, No. 5460%
McKinnor's	
Hinged Hanger Track, 10 ft., 11 ¢ 60&5% 1 x 3-16 Track	Manila, 7-16 in, diam, and larger:
1 x 3-16 Track	Manila, 7-16 in. diam. and larger: Purelb., 10@10¼¢ Sisal, 7-16 in. diam. and larger:
Richards Mfg. Co.: Common, 1 x 3-16 in., \$3.00; 116 x	Pure
Special Hinged Hanger Rail. 60&10% Lag Screw Rail. No. 65	Pure
Richards Mfg. Co.: Common, 1 x 3-16 in., \$3.00; 1½ x 3-16, \$3.25; 1½ x 3-16, \$3.50. Special Hinged Hanger Rail60&10% Lag Screw Rail, No, 65	Kones, Medium and Coarse:
Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64, \$4.00; 45, \$3.25; 46, \$3.50; 49, No. 1	Mixed
\$3.25; 49, No. 2, \$3.50.	Yarn, Coarse and Untarred: Mixedlb., 5@51/2¢
Rakes— NOTE.—Many goods are sold	Harn, Coarse and Untarrea. Mixed
at net prices.	Medium, ¼-in. and larger. 18@20¢
Fort Madison Red Head Lawn\$3.25 Fort Madison Blue Head Lawn\$2.73	In coils, ½¢ advance. Jute Rope:
Cronk's: Steel Garden: Champion, 75%; Ideal, 80%; Victor	Thread No. 1. 14-in, and un.
Queen City Lawn, \$\psi\$ doz., 20 teeth, \$2.85; 24, \$3.00net	1b
Anticlog Lawn, W doz\$4.0) Malleable Garden	Wire Rope-
\$15.00; 14, \$16.00; 16, \$18.0080% Kohler's:	Galvanized
Kohler's: Lawn Queen, 20-tooth	Ropes, Hammock-
Paragon, 20-tooth	Covert Mfg. Co.: Jute, 35%; Sisal20%
Malleable Garden, 14-tooth v doz. \$2.40 Malleable Garden, 14-tooth, \$2 doz. \$2.00@2.25	Rules Boxwood
Rasps, Horse-	Boxwood
Disston's	Flexifold
Disaton's	Miscellaneous
New Nicholson70&10@75% See also Files,	Stationers'
Razors-	Chapin-Stephens Co. 60 / 60 / 60 / 60 / 60 / 60 / 60 / 60
Liana Bo-ras-ic	Lufkin's Lumber
Liana Bo-ras-ic	Ivory
Reels, Fishing-	Sash Balances—
Hendryx:	See Datance, Susn.
M 6, Q 6, A 6, B 6, M 9%. M 16, Q 16, A 16, B 16, 4008, Rubber. Populo, Nickeled Populo20%	Sash Locks—See Locks, Sash. Sash Weights—
Aluminum, German Silv., Bronze.25% 1240 N, 124 N20%	See Weights, Sash.
3004 N, 06 N, 6 RM, G 925% 4 N, 6 PN, 24 N, 26 PN20%	Sausage Stuffers or Fillers
0924 N. 33\%; 02084 N., 33\%; 002904 PN., 33\%; 802 N., 33\%;	See Stuffers or Fillers, Sausage. Saw Frames—
Populo, Nickeled Populo. 20% Aluminum, German Silv., Bronze, 25% 1240 N, 124 N	See Frames, Saw.
Competitor, 102 P. 102 PN. 202 P.	Saw Sets-See Sets. Saw.

	Dallad Whared E H on D. H	Formed Handley Steel Plades Des	2 - 4
Saws-	Rolled Thread, F. H. or R: H., Iron	Forged Handles, Steel Blades, Ber- lin50%	Slates, School—
Atkins': ircular45%	Iron	lin	Factory Shipments.
Band	8 to 14		"D" Slates50@50&10% Eureka, Unexcelled Noisless
Cross Cuts	Set and Cap-	Niagara Suips	60&5 tens
One-Man Cross Cut	Set (Iron)75&10&7\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	W. R. W. Forged Handles, 25%;	Victor A, Noiscless. 6044 tens 65%
Hand, Rip and Pane!35&5% Miter Box and Compass40%	Iron	J. Wiss & Sors Co.: Wiss Forged Steel 239	Slaw Cutters—See Cutters.
Mulay, Mill and Drag45%	8q. Hd. Cap	Pruning Shears-	Snaps, Harness-
Chapin-Stephens Co.:	Hex. Hd. Cap	Cronk's Hand Shears331/3%	German
Turning Saws and Frames. 30@30&10%	Fillister Hd. Cap60&7\\\\2\%	Cronk's Wood Handle Shears33\%\% Disston's Combined Pruning Hook	Covert Mfg. Co.: Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%. High Grade, 40%; Trojan
Offiling Tribelless Ontablishment	Wood-	and Saw, @ doz. \$18.0025%	Roller, 30&2%.
Disston's: Circular, Solid and Ins'ted Tooth.50%	List July 23, 1903.	Cronk's Wood Handle Shears33% Disston's Combined Pruning Hook and Saw, ## doz. \$18.0025% Disston's Pruning Hook only, ## doz. \$12.00	Jockey25%
Band, 2 to 18 in, wide	Flat Head, Iron8714.65@% Round Head, Iron856.5@%	John T. Henry Mfg. Co.: Pruning Shears all grades 40%	Snaths-
	Flat Head Drass 904567 9	Pruning Shears, all grades40% P., S. & W. Co40&10% Columbian Cutlery Co.:	Scythe55@60%
Narrow Crosscuts	Round Head, Brass 17/2000 /	Hedge, Wilcut Brand60&10% Lawn and Border, Wilcut Brand,	Snips, Tinners-See Shears.
	Round Head, Bronze. 721/465@ . %	Lawn and Border, Wilcut Brand, 60&10%	Spoons and Forks-
Woodsaw Rods, Tinned15%	Drive Screws871/265@%	Sheaves-Sliding Door-	Silver Plated-
Framed Wootsaws. 25% Woodsaw Blades. 25% Woodsaw Rods, Tinned. 15% Hand Saws, Nos, 12, 99, 9, 16, dl00. D6, 120, 76, 77, 8. 25% Hand Saws, Nos, 7, 107, 107%, 3, 1.	Scroll Saws-		Good Quality 50&10@69.35%
Hand Saws, Nos. 7, 107, 1071/2, 3, 1,	See Saws, Scroll.	Reading	Cheap
Hand Saws, Nos. 7, 107, 107, 3, 1, 0, 00, Combination	Scythes— Per doz.	Sliding Shutter—	1847 Rogers Bros. 49&10%: Hogers
C. E. Jennings & Co.'s:	Grass, No. 1, Plain \$7.00@7.50	Reading list	& Hamilton,
Back Saws	Clipper Bronzed Webb. \$7.25@7.75		Eagle Brand
Butcher Saws	No. 3 Clipper, Pol'd Webb, \$7.50@8.90	Shells-Shells, Empty-	Wm. Rogers & Son
Framed Wood Saws25&7½%	No. 6 Clipper and Solid Steel,	Brass Shells, Empty: Climax, 10 and 12 gauge65&10% Club, Rival, 65&5%; First Quality,	Miscellaneous
Hand Saws121/2%	Bush, Weed and Bramble, Nos.	Club, Rival, 65&5%; First Quality, 60&5%	German Silver60@60£5%
Wood Saw Blades331/4&71/2// Millers Falls:	11, 12 and 13\$7.25@7.75	Paper Shells, Empty: New Rapid, 19, 12, 16 and 20 gauge,	Teasper gro .50@55¢
Butcher Saws	Grain, No. 1\$9.00@9.50	200210/2	Tables per gro. \$0.90 @\$1.00
Star Saw Blades	Bronzed Webb, No. 1\$9.25@9.75 Nos. 3 and 4 Clipper, Grain,	Climax, 10 and 12 gauge; Acme, 10,	Springs- Door-
Butcher Saws Blades	\$9.50@10.00	12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade,	Bardsley's Spring and Check40%
Peace & Richardson's Hand Saws.30% Simonds':	Solid Steel, No. 6\$10.00@10.50	Vision 1 10 and 10	Chicago (Coil)
Circular Saws45%	Seeders, Raisin-	Rival Grade	Pullman Door and Gate 10%
Crescent Ground Cross Cut Saws.30%	Enterprise25@30%	Nivo League, 12 and 12 gauge; Rival Grade. 25% New Climax, Defiance 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge. 20&5% Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade. 20%	Reliance (Coil)
One-Man Cross Cuts40&10% Gang Mill, Mulay and Drag Saws.45% Band Saws	Sets- Awl and Tool-	and 20 gauge	Torrey's Rod, 39 in @ doz. \$1.10
Band Saws	Fray's Adi. Tool Handles Nos. 1, \$12:	20 gauge; League, Union, 14, 16	Carriage, Wagon, &c
Butcher Saws35(a35&7\\\2\%)	2, \$16; 3, \$12	and 20 gauge; Repeater Grade20%	11/4 in. and Wider: Per 100 lb. Black
Hand Saws	1, \$12; No. 4, \$12; No. 5, \$1820&10%	Shells, Loaded— Loaded with Black Powder40%	Half Bright \$4.75@\$5.00
Compass, Key Hole, &c25@25&7\\\ Wood Saws	Garden Tool Sets-	Loaded with Smokeless Powder,	Bright\$5.25@\$5.50
Wood Saws	Ft. Madison Three Plows, Hoe, Rake and Shovel	medium grade40&5%	Painted Seat Springs: 11/2 x 2 x 26per pair. 45@47¢
		Loaded with Smokeless Powder, high grade40&10&10%	11/2 x 3 x 28 per pair . 68@71¢
Hack Saw Blades and	Sets, Nail-	Union Metallic Cartridge Co.:	Sprinklers, Lawn-
Frames— Atkins' Hack Eaw Blades A A A25%	Octagongro.\$3.50@3.75 Buck Bros	New Club, Black Powders40% Nitro Club, Smokeless Powders.40&5%	American Foundry & Mfg. Co.:
Disston's:	Cannon's Diamond Point, \$\mathbb{P}\$ gro, \$12, 40&10%	Arrow, Smokeless Powders, 40&10&10%	Cactus 65%; Japanese, 70%; Na- tional, 49 doz\$12.00
Concave Blades	Mayhew's	Winchester: Smokeless Repeater Grade40&5%	tional, \$\psi\$ doz \$12.00 Enterprise \$26(30%) Philadelphia No. 1, \$\psi\$ doz, \$12; No. 2, \$15; No. 3, \$20 30%
Keystone Blades	Snell's Corrugated, Cup Pt40&10% Snell's Knurled, Cup Pt40&10% Victor Knurled, Cup Pt gro. \$7.50	Smokeless Leader Grade40&10&10% Black Powder40%	2, \$15; No. 3, \$2030%
Simonds File Co35% C. E. Jennings & Co.'s:	Victor Knurled, Cup Pt # gro. \$7.50	Shingles, Metal- Per Sa	Squares-
Hack Saw Frames, Nos. 175, 180 40&71/2%	Rivet-	Edwards Mfg. Co.: Painted. Galv.	
Hack Saws, Nos. 175, 180, complete, 40&71/2 %	Regular list	Painted. Galv. 14 x 20 \$4.25 \$6.00	Nickel plated List Jan. 5, 1909. Steel and Iron. \ 80@8065%
Goodell's Hack Saw Blades40&10% Griffin's Hack Saw Frames35&5&10%	Saw-	10 x 14 4.50 6.25	Rosewood Hal. Try Square and
Griffin's Hack Saw Frames35&5&10% Griffin's Hack Saw Blades35&5&10%	Atkin's:	7 7 10 4.75 6.50	Iron Hdl. Try Squares and T-
Stor Hock Saws and Rlades 15&10%	Criterion	Dixie, 14 x 20 in\$4.25 \$5.50	Bevels40&10@40&10&10%
Sterling Hack Saw Blades 30&10&5% Sterling Hack Saw Frames 30&10&10%	Disston's Star, Monarch and Tri- umph	Wheeling Corrugating Co.: Dixie, 14 x 20 in\$4.25 \$5.50 Dixie, 10 x 14 in 4.50 6.00 Dixie, 7 x 10 in 5.00 6.75	Bevels40&10@40&10&10 % Disston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron
Sterling Power Hack Saw Machines.	umph	Shoes, Horse, Mule, &c.	Stock and Bevel
each, No. 1, \$25.00; No. 2, \$30.0010% Victor Hack Saw Blades20%	Nos. 3 and 4, Cross Cut. \$20.60 No. 5, Mill. \$30.00 Nos. 10. 11, 95. \$15.60 No. 1 Old Style. \$10.00	F.o.b. Pittsburgh:	Squeezers, Lemon
Victor Hack Saw Frames40%	Nos. 10, 11, 95\$15.60 (3	Ironper keg . \$4.10	Wood, Porcelain Lined:
National Hand Blades40%	Special\$16.25	Steelper keg.\$3.85 Burden's, all sizes	Cheap
National Hand Blades	Special \$16.25 Giant Royal Cross Cut \$4 doz, \$8.00 Royal, Hand \$4 doz, \$4.50 Taintor Positive \$4 doz, \$6.75	Shot-	Good Grade
Scroll-	Taintor Positive	25-lb. baa.	Iron, Porcelain Lined doz. \$1.75
	Shaving-	Drop, up to B\$1.80	Staples-
Barnes, No. 7, \$1525% Barnes, Scroll Saw Blades40%	Fox Shaving Sets, No. 33	Drop, B and larger 2.05 Buck 2.05	Barbed Blind 85&5@85&10%
Barnes' Velocipede Power Scroll Saw, without boring attachment. \$18:	Smith & Hemenway Co,'s	Chilled	Electricians' 80&10&10@85%
with boring attachment, \$2020%		Dust 2.3)	Fence Staples, Polished, \$2.05; Galvanized\$2.35
without boring attachment, \$18: with boring attachment, \$20	Sharpeners, Knife— Pike Mfg, Co.:	Shovels and Spades—	Poultry Netting Staples
15&10%	Fast Cut Pocket Knife Hones.	Association List, Nov. 15, 1902. 10% Avery Stamping Co	per lb. 31/4@31/4
Scales-	Mounted Kitchen Sand Stone,	Snow Shovels-	Steels, Butchers'-
Union Platform, Plain.\$2.10@2.20	Natural Crit Carring Waife	Long Handle\$3.25@\$3.50 Wood and Mall, D Handle,	Dick's
Union Platform, Stpd. \$2.20@2.30 Chatillon's:	Hones, & doz\$3.00	Wood and Mall, D Handle, \$3.75@\$4.00	Steelyards 30@30&10%
Furaka 25%	Knife Hones, \$\text{\$\text{\$\text{\$\text{\$\text{Knife}\$}}} \text{\$\tex{\$\text{\$\exitin{\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\exititt{\$\texititt{\$\text{\$\text{\$\exititit{\$\text{\$\text{\$\}\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\tex		Stocks and Dies-
Favorite 40% Grocers' Trip Scales 50% The Standard Portables 40% The Standard R. R. and Wag-	Hones, \$\psi\$ doz\$000 Quick Cut Emery Carving Knife Hones, \$\psi\$ doz\$150 Quick Edge Pocket Knife Hones, \$\psi\$ doz\$2.50	Sieves and Sifters-	Blacksmiths' 50@504109
The Standard R. R. and Wag-	Skate-	Hunter's Imitationgro. \$9.50@10.00	Curtis Rev'ble Ratchet Die Stock. 25%
on50&10%	Smith & Hemenway Co., Eureka50%	Hunter's Genuine	Green River. 25% Lightning Screw Plate. 25%
Scrapers-		per gro. \$12.00@12.50	Lightning Screw Plate25% Little Giant25% Reece's New Screw Plate25%
Dox, 1 Handle doz \$2.00@2.25	Shaves, Spoke-	Sifters, Ash-	
Box 2 Handle doz \$2.50@2.60	Iron	Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, \$3.25	Stoners, Cherry-
Ship Light, \$2.00; Heavy, \$4.50 Chapin-Stephens Co., Box30@30&10% Richards Mfg. Co., Foot60%	Railey's (Stanley R & L. Co.)45%	9 doz	Enterprise
Richards Mfg. Co., Foot60%	Chapin-Stephens Co30@30&10% Goodell's, # doz. \$9.0015&10%	Per doren	Stones-Oll, &c.
Screws-Bench and Hand	Shears-	Mesh 1; 16 18 27	Pike Mfg. Co., 1907 list: \$\ \text{b} \ \text{D} \\ \text{Arkansas} St. No. 1, 3 to 5\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Bench, Iron, doz., 1 in., \$2.50@	Cast Iron 7 8 9 in	1 1ron Wire 51 00 1.00 1.10 1.2)	Arkansas St. No. 1, 51/2 to 8 in.\$3.50
2.75 : 116. \$1.00@3.25 : 114 . \$3.50@3.75	Rest \$16.00 18.00 20.00 aro.	Tinned Wire. \$1.15 1.25 1.20 1.30 Sleves, Wooden Rim-	Lily White Washita, 4 to 8 in .60¢
Hand, Wood	Good\$13.00 15.00 17.00 gro. Cheap\$5.00 6.00 7.00 gro.	Nested, 10, 11 and 12 Inch.	Washita St. Extra 4 to 8 in . 60 ¢
Bench, Wood20@20&10% Hand, Wood70&10@70&10&10.00 Chapin-Stephens Co., Hand70@70&10&224%	Cheap \$5.00 6.00 7.00 gro. Straight Trimmers, &c.:	Meah 18, Neated doz, \$0.90@0.95	Washita St., No. 1, 4 to 8 in. 40¢
	Rest quality Jap 70@70&10%	Mesh 20, Nested doz. \$1.00@105	Lily White Slips90¢
Coach, Lag and Hand Rall—	Best quality Nickel. 60@60&10% Tailors' Shears40@40&10%	Mesh 24, Nested doz. \$1.30@1.49	Rosy Red Slips90¢
Lag. Cone Point 80&5 @ 80&10 % Coach, Gimlet Point 80 @ 80&5 % Hand Rail 70&10@75 %	Acme Cast Shears	Sinks. Cast Iron—	Washita Slips, No. 170¢
Hand Rail 70&10@75%	Acme Cast Shears 40,648,65% Heinisch's Tailor's Shears 10% National Cutlery Co.'s Nickel Plated. 50&10%; Japan Handles	Painted, Standard list: 12 x 12 to 22 x \$\sigma 36 in \dots \dots 60\%	Washita Slips, No. 2
Jack Screws-	60&10%; Japan Handles70&10% Wilkinson Shear & Cutlery Co.:	20 x 24 to 24 w 50 in 50%	India Oil Stones (entire list)331/2/ Quickcut Emery and Corundum Oil Stone, Double Grit
Standard List 70&10@75% Millers Falls50&10&10%	Sheen, 1900 list	24 x 60 to 24 x 120 in 30% Barnes' low list:	Quickcut Emery and Corundum Axe
Millers Falls	Grass	Up to and including 20 x 36 in50&5%	Quickcut Emery and Corundum Axe Stone, Double Grit
Machine-	J. Wiss & Sons Co.	20 x 40 to 24 x 50 in	Hindostan No. 1, R'g'lar. 30 th 86
Cut Tread, Iron, Brass or	Best Quality Jap'd	NOTE.—There is not entire uniformity in lists used by jobbers.	Oulckett Every Rubbing Bricks. 47% Hindostan No. 1, R'g'lar. 39 B. 56 Hindostan No. 1, Small. 39 B 10 ¢ Axe Stones (all kinds)
Bronze:	Tallors	Skeins, Wagon-	Turkey Oil Stones, Extra, 5 to
Flat Head or Round Head,	Tinners! Snips-	Cast Iron	Turkey Oil Stones, Extra, 5 to 3 in. 39 h 80¢ Oneer Creek Stones, 4 to 3 in. 20¢ Queer Creek Slips. 40¢
Fillister Head\$0@50&10%	Steel Blades	Steel	Queer Creek Slips
	1, 1,444,464,70	H show double to mint out	,

Scythe Stones-	Th
Pike Mfg, Co., 1901 list:	Th Tin
Black Diamond 8. S. # gro. \$12.00 Lamoille S. S # gro. \$11.00	Dai
White Mountain S. S. gro. \$9.50	Ti
Extra Indian Pond 8.8. p gro. \$8.00	Singl Moni
No. 2 Indian Pond S.S. P gro. \$5.00	Ti
Pike Mfg. Co., 1991 list: Black Diamond 8. 8. 2 gro. \$12.00 Lamoille S. 8	1
Pure Corundum. # gro. \$18.00 Crescent # 77.00 Emery Scythe Rifles 2 Coat. \$3.80 Emery Scythe Rifles, 3 Coat. \$11.00 Emery Scythe Rifles, 4 Coat. \$13.20 Balance of 1904 list 33\%/ Electro (Artificial), # gro., 33\%/ \$12.00	Stamp
Emery Scythe Rifles, 4 Coat, \$13.20) Balance of 1904 list 33%%	very
Electro (Artificial), \$\pi\$ gro., \$12.00	Tire
\$12.00	See I
Stoppers, Bottle-	То
Victor Bottle Stoppers \$9 gro. \$9.00	L. &
Stops- Bench-	Myers
Millers Falls	Gifford
Door- Chapin-Stephens Co50@50&10%	Smith
Plane-	Gold
Chapin-Stevena Co20%	Atkin
Straps— Box-	Simon
Acme Embossed, case lots20&10&10% Cary's Universal, case lots20&10&10%	
Stratchers, Carpet-	L. &
Cast Iron, Steel Pointsdoz.55¢ All Steel Socketdoz.\$2.00@2.25	Tr
Excelsior Stretcher and Tack Hammer Combined, 19 doz., \$6.0020%	_
	Ballo
Stuffers, Sausage—	\$1.1. Harp
Enterprise Mfg. Co	doz.
P., S. & W. Co	Imito
Sweepers, Carpet—	Newho
Bissell Carpet Sweeper Co.: \$\text{\$\pi\$ doz.}\$	Victor
Triumph, Fancy Veneers\$33.00	Oneid Hector
Elite, Hungarian Ash\$29.00	26
Bissell Carpet Sweeper Co.; 407.	Mous
Grand Kapids, Nickel, \$22.00; \$22.00 Standard, Nickel, \$22.00; Japan. \$22.00 Crown Jewel, Nickel, \$21.00; Japan. \$20.00 Crystal, Glass Top. \$36.00 Grand, 17 in, wide. \$36.00 Parlor Grand. \$48.00 Club. 24 in, wide. \$54.00	Mous
Crown Jewel, Nickel, \$21,00; Jap.\$19.00	Marty (G
Grand, 17 in, wide	No.
Parlor Grand. \$48.00 Club, 24 in, wide. \$54.00 Hall 28 in, wide. \$60.00	No.
NOTE,—Rebates: 50c per dozen on	No. Oneid
NOTE.—Rebates: 50c per dozen on three dozen lots; \$1 per dozen on five- dozen lots; \$3 per dozen on ten-dozen lots; \$2,50 per dozen on twenty-five dozen	Out
lots.	Eas: Eas: Woo
Tacks, Finishing Nails,	Prei
American Carpet Tacks 90440%	do Te
American Carpet Tacks90440% American Cut Tacks90440% Swedes' Cut Tacks90450% Swedes' Upholsterers'90450% Gimp Tacks	Disst
Swedes' Upholsterers' 90c50%	Disste
Gimp Tacks	den Kohle 5 in
Trimmers' Tacks90&40%	Never
Trimmers' Tacks	Wood
Hungarian Nails 80620%	Tr
Hungarian Nails	B. &
NOTE - The above prices are for	Han
Straight Weights.	McKi
Miscellaneous-	Mode
Double Pointed Tacks, 9066 tens@-%	M
Se also Nalls, Wire.	Galve
Tanks, Oil and Gasoline-	d5d Tv
Wilson & Friend Co.: Gal. Gasoline Oil	Flax
30 \$2.75 \$3.00 60 \$3,50 \$4.00	No.
110 \$5.00 \$5.75	No.
Tapes, Measuring-	No.
American Asses' Skin50@-% Patent Leather25@30&5%	Chall
Steel	Bai Cotte
Keuffel & Esser Co.:	to
American Asses' Skin50@—% Patent Leather25@30455 Rteel33 ¼ 45% Chesterman's25@3545% Keuffel & Esser Co.; Favorite, Ass Skin49&10@50% Favorite, Duck and Leather	Cotte
Metallic and Steel, lower list, 35@ 35&5%; Pocket, 35@35&5%.	Ame
Acces' Skin 40&10@50°/	Ame
	Indie
TURKET	India
Steel	India
etc. 25% Chesterman's Steel, No. 1038L.	2, 3,
chesterman's Steel, No. 10381.	Ba
Teeth, Harrow-	No:

THE IRC)
Thermometers-	-
in Case, Cabinet, Flange, Dairy, &c30@33 1/3 %	
Ties, Bale—Steel Wire—	-
ingle Loop82\2&10\% onitor, Cross Head, &c.70&2\2\%	
See Shears, Tinners', &c.	1
Tinware-	
amped, Japanned and Pieced, sold	
ire Benders, Upsetters, &c.	
ee Benders and Upsetters, Tire.	
Tools—Coopers'-	
. & I. J. White20@20&5% Haying—	
yers' Hay Too s	
ford-Wood Co	-
Miniature-	
mith & Hemenway Co,'s, Davidson, & doz., Nickel Piated, \$1.50; Gold Plated\$2.0)	
Saw-)
tkins' Cross Cut Saw Tools35&5% mond's Improved33½% monds' Crescent25%	
Ship— & I. J. White25%	
Transom Lifters—	
See Lifters, Transom.	
Traps—Fly— alloon, Globe or Acme, doz.,	
\$1.15@\$1.25; gro\$11.50@12.00 arper, Champion or Paragon, doz., \$1.25@1.40; gro.\$13.00@13.50	
doz., \$1.25@1.40; gro.\$13.00@13.50	
Game-	
ewhouse	
ictor	
nitation Oneida .75@10% ewhouse .45@45&5 awley & Norton .65% ictor .75@75&10% neida Community Jump .50% ector .75@75&10% Mouse and Rat	1
ouse, Wood, Choker, doz. holes,	
louse, Round or Square Wire,	
larty French Rat and Mouse Traps	
(Genuine): No. 1, Rat. 39 doz., \$13.25\$11.50 doz.	
No. 3½, Rat, \$\frac{1}{2}\ doz., \$5.25. \$4.70 doz.	
No. 5, Mouse, & doz., \$3.00. \$2,25 doz.	
Out o' Sight, Mouse, & doz\$0.60 Out o' Sight, Rat, & doz1,25	
doz. \$5@90¢ doz. \$5@90¢ doz. \$6@90¢ (Genuine): No. \$13.25\$11.50 doz. No. 3, Rat. \$1 doz., \$13.25\$11.50 doz. No. 3, Rat. \$1 doz., \$6.50\$5.75 doz. No. 3, %, Rat. \$1 doz., \$3.25\$1.70 doz. No. 5, Mouse, \$1 doz., \$3.85. \$3.00 doz. No. 5, Mouse, \$1 doz., \$3.85. \$3.00 doz. No. 5, Mouse, \$1 doz., \$3.80\$2.25 doz. meida Community: Out o' Sight, Mouse, \$1 doz. \$1.25 doz. doz. doz. doz. doz. doz. doz. doz.	
Premier Tin Choker, 5 hole, & doz. traps	
Termela	
Disston Brick and Pointing25% Disston Plastering20%	
histon Standard Brand and Gar- den Trowels. 30%	
isston Brick and Pointing	
oodrough & McParlin, Plastering.25%	
Trucks, Warehouse, &c	
8. & L. Block Co.: New York Pattern	
Western Pattern	
leKinney Truckseach, net \$10.00	
Tubs, Wash-	
Tubs, Wash— M'f'gr's list, price per gross. No. 0 1 2 3 alvanized.\$67 \$79 \$89 \$99 10&742	
alvantzed \$67 \$79 \$89 \$99 10471/2 6565%	
Twine, Miscellaneous-	
No. 9, 1/4 and 1/2-lb. Balls . 21@23¢	
lax Twine: No. 9, 1/4 and 1/2-lb. Balls. 21@23¢ No. 12, 1/4 and 1/2-lb. Balls. 19@21¢ No. 18, 1/4 and 1/2-lb. Balls. 16@18¢ No. 18, 1/4 and 1/4-lb. Balls.	
No. 24, 1/4 and 1/2 -lb. Balls. 151/2@171/2¢	
No. 36, ¼ and ½-lb. Balls. 15@17¢ halk Line, Cotton ¼-lb. Balls	
Balls	
to doz	
to dos	
1/2-lb. Balls	
Balls	
Balls	
ndia :-Ply Hemp, 114-18. Balls.	
76081/6 1	
3. 4 and 5-Ply Jute, 114-lb. Balls 9@1 6 lason Line, Linen, 14-lb. Bls. 76 6: 264 Mattress, 14 and 14 lb. Balls, according to quality, 30@604	
o: 264 Mattress, 14 and 16 1b.	
Balls, according to quality,	
Fool, 8 to 6 ply B 6¢; A 71/2¢	
e Table of "Current Metal Prices	9

N AGE	June 25, 1908
V _{ises}	Washers-Leather, Axle-
V ises— Solid Box50&5@50&10&5%	Solid
Parallel-	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Athol Machine Co.: Simpson's Adjustable40% Standard 40%	!ron or Steel— 8ize buit 5-16 % 1/4 % 1/4 Washers 84.65 3.75 2.45 2.25 2.05
Standard	Washers\$4.65 3.75 2.45 2.25 2.05 The above prices are based on
Standard 40% Amateur 25% Columbian Hdw, Co. 40% Fisher & Norris Double Screw, net, each, Nos, 2, \$10.50; 3, \$16.00; 4, \$20.50; 5, \$27.00. Fulton Mach, & Vise Co.: Reed, Swivel. 25% Star, Solid Jaw. 40% Hollands': 40%40.85%	The above prices are based on \$6.75 off list. In lots less than one keg add \$4\text{c} per lb.; 5-lb. boxes add \$4\text{c} to list.
\$20.50; 5, \$27.00. Fulton Mach, & Vise Co.:	1/2¢ per lb.; 5-lb. boxes add 1/2¢ to list.
Star, Solid Jaw	Over 1/2-inch, barrel lots,
Machinists' 40@40&5% Keystone65&5@70%	Wedges—
Hollands': 40@40&5% Machinists' 40@40&5% Keystone 65&5@70% Lewis Tool Co.; 65&5@70% Adjustable Jaw. 30% Monarch, 50% Solid Jaw 50% Massey Viso Co.; 80id Jaw 50%	Oil Finishlb., 24/@24¢ Weights—Hitching—
Massey Vise Co.:	Covert Mfg, Co30&2%
Clincher 40% Perfect, 15%; Lightning Grip	Sash— Per net ton, f.o.b. factory: Eastern District\$21.00@— Western and Central
	Western and Central Districts \$21.00@\$22.00
Farker 8: 20@25%; Regulars 20@25% Victor, 20@25%; Regulars 20@25% Vulcan's	Wheels, Well-
Rock Island	8-in., \$2.00; 10-in., \$2.45; 12-in., \$3.25; 14-in., \$4.45.
Saw Filers	Wire and Wire Goods— Bright and Annealed:
Disston's D 3 Clamp and Guide, 39 doz., \$24.00, 30%; Clamps30%	### Annealed: 6 to 9
Disston's D 3 Clamp and Guide, \$\frac{9}{2}\$ doz., \$24.00, 30%; Clamps30% Perfection Saw Clamps, \$\frac{1}{2}\$ doz\$\frac{4}{3}\$1.50 Reading60%	27 to 36
Wood Workers-	6 to 9
Fulton Mach. & Vise Co.: Reed	15 to 16
Star 40% Star 40% Massey Vise Co.; Lightning Grip, 15%; Perfect 15% Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	15 to 16. 72½£10£5% 17 to 18 72½ 19 to 26. 70£5£2½ 27 to 36. 65£10£10%
in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	Coppered: 6 to 965&10&10% 10 to 1470&10&5%
Miscellaneous— Holland's Combination Pipe60@60&5%	10 to 14
Massey's Quick Action Pipe40%	27 to 36
87 Series, 69%; 187 Series, 60&5%; No. 870, 40%. Rock Island Pipe	6 to 18
Wads-Price per M.	Cust Steet Wire
B. E., 11 up	Spooled Wire- Annealed and Tinned,
B. E., 11 up	Rrass and Conner 604104104109
B. E., 7	Retailers' Assortments, per box. \$2.10@\$2.40
P. E., 8	Wire Clothes Line, See Lines, Wire Picture Cord, see Cord.
Ely's B. E.,11 and larger.\$1.70@1."5 Ely's P. E., 12 to 20\$3.00@3.25	Bright Wire Goods— Steel Wire Goods90&33 ½ @—% Brass Wire Goods90@90&10%
Ware, Hollow-	Brass Cup and Shoulder Hooks, 85&10%
Cast Iron, Hollow- Stove Hollow Ware:	Wire Cloth and Netting- Galvanized Poultry Netting,
Enameled	80&21/2(0.80&71/2%
Country Hollow Ware, per 100	Standard Galv. Hardware Grade: 100 ft. rolls, 21 to 48 in. wide,
lbs	Painted Serven Cloth, 100 ft., \$1.35 Standard Galv. Hardware Grade: 100 ft. rolls, 2\\$ to \\$8 in. wide, Per 100 sq. ft. Nos. 2, 2\\$\frac{1}{2}\\$and 3 Mesh\\$2.75 Nos. 4 and 5 Mesh\\$3.00 No. 6 Mesh\\$3.275 Nos. 7 and 8 Mesh\\$3.75
Maslin Kettles65&10% Covered Wares: Tinned and Turned35&10%	No. 6 Mesh
Tinned and Turned35£10% Enameled45£10% See also Pots, Glue.	wire, Darb-See Trade Report
Enameled-	Wrenches— Agricultural80&10&10% Alligator or Crocodile70&10@75%
Agate Nickel Steel Ware334% Iron Clad Ware70&10% Lava and Volcanic, Enameled40&10%	Baster Pattern S Weenches
Tea Kettles-	70.6567/06.10% Drop Forged 8 45@456.5% Acme 60&10 Alligator Pattern, 70%; Bull Dog. 70% Bemis & Call's; Adjustable 8, 40%; Adjustable 8 Pipe.
Galvanized Tea Kettles: Inch 6 7 8 9	Alligator Pattern, 70%; Bull Dog70% Bemis & Call's:
Steel Hollow Ware-	10%; Briggs Pattern, 40%; Combination Bright, 40%.
Avery Spiders and Griddles65@65&5 % Avery Kettles	Adjustable 8, 40%; Adjustable 8 Prpe, 10%; Briggs Pattern, 40%; Combination Bright, 40%. Steel Handle Nut
Never Break Spiders and Griddles	Boardman's
Never Break Kettles	Coes' Genuine Steel Hdl40&10&5&5% Coes' Genuine Key Model40&10&5&5%
Bond Steel Actives	40&10&5&5% Coes' 'Mechanics' ''40&10&10&5&5% Donohue's Engineer40&10
Warmers, Foot— Pike Mfg. Co., Soapstone40@40&10%	Donohue's Engineer
Washboards— Solid Zine: # doz.	Donohue's Engineer
Solid Zinc: # doz. Crescent, family size, bent frame.\$4.05 Red Star, family size, stationary protector \$4.05	Less than case lots
Double Zinc Surface.	Case lots
Saginaw Globe, family size, station- ary protector\$3.55 Cable Cross, family size, station-	Solid Handles, P., S. & W.50&10%: full cases
ary protector. \$3.60 Single Zinc Surface: Naiad, family size, open back, perforated \$3.00 Single Sarinaw Globe \$2.85	Uwanta Wrench Co.: Uwanta Special, Iron Handle
	Other Wrenches
Brass Surface: Brass King Single Surface open	Whitaker Machinists': Case Lots
back	Wrought Goods—
Glass Surface: Glass King Single Surface open	Staples. Hooks, &c., list March 17, '9285&10&10%
Enamel Surface:	Zinc- (Cask lots at mill.)
Enamel King, Single Surface, venti- lated back	Sheet per 100 lb., \$7.00
and the Plant Lame of Frank Mon	o th